ORDER NO. SD83012369C9

Service Manual

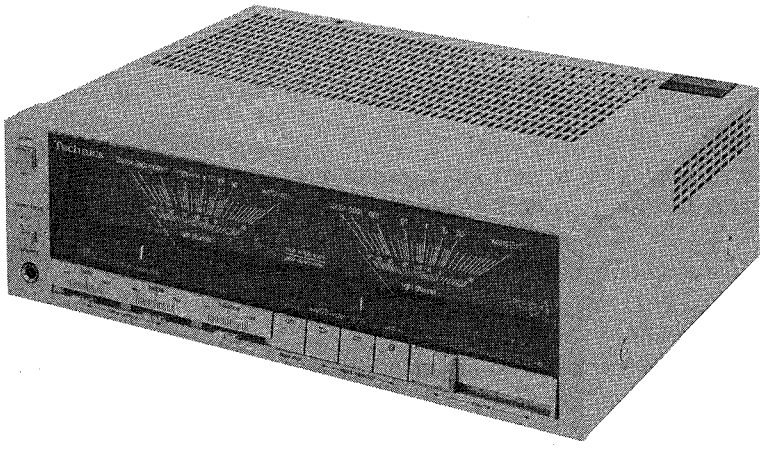
Stereo Integrated Amplifier

SU-7

[EX],[EGA],[EF],[EB],[EH],
[EW],[Ei],[XA],[XL]

SU-7(K)

[EX],[EGA],[EH],[EW],
[XA],[PC]



* The colors of this model include silver and black.
* The black type model is provided with (K) in the Service Manual.

Areas

* [EX] is available in Scandinavia.
* [EGA] is available in F.R. Germany.
* [EF] is available in France.
* [EB] is available in Belgium.
* [EH] is available in Holland.
* [EW] is available in Switzerland.
* [Ei] is available in Italy.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [XL] is available in Australia.
* [PC] is available in European Audio Club.

Specifications (Specifications are subject to change without notice for further improvement.)

(DIN 45 500)

■ AMPLIFIER SECTION

20 Hz~20 kHz continuous power output	
both channels driven	2 × 50W (4Ω)
	2 × 50W (8Ω)
1 kHz continuous power output	
both channels driven	2 × 50W (4Ω)
	2 × 50W (8Ω)
Total harmonic distortion	
rated power at 20 Hz~20 kHz	0.07% (4Ω)
	0.03% (8Ω)
rated power at 1 kHz	0.01% (4Ω)
	0.005% (8Ω)
half power at 20 Hz~20 kHz	0.03% (4Ω)
	0.02% (8Ω)
half power at 1 kHz	0.009% (4Ω)
	0.005% (8Ω)
−26 dB power at 1 kHz	0.01% (4Ω)
50 mW power at 1 kHz	0.01% (4Ω)
Intermodulation distortion	
rated power at 60 Hz: 7 kHz=4:1, SMPTE, 8Ω	0.03%
Power bandwidth	
both channels driven, −3 dB	10 Hz~25 kHz (8Ω)
Residual hum and noise	0.8 mV
Damping factor	30 (8Ω)
Input sensitivity and impedance	
PHONO	2.5 mV/47kΩ
TUNER, AUX/CD/VIDEO	150 mV/27kΩ
TAPE	150 mV/27kΩ
PHONO maximum input voltage (1 kHz, RMS)	150 mV
Frequency response	
PHONO	RIAA standard curve
	±0.8 dB (30 Hz~15 kHz)
TUNER, AUX/CD/VIDEO, TAPE	10 Hz~100 kHz (−3 dB)
S/N	
rated power (4Ω)	
PHONO	79 dB (IHF, A: 81 dB)
TUNER, AUX/CD/VIDEO, TAPE	88 dB (IHF, A: 99 dB)
−26 dB power (4Ω)	
PHONO	62 dB
TUNER, AUX/CD/VIDEO, TAPE	62 dB
50 mW power (4Ω)	
PHONO	62 dB
TUNER, AUX/CD/VIDEO, TAPE	62 dB
Tone controls	
BASS	50 Hz, +10 dB~ −10 dB
TREBLE	20 kHz, +10 dB~ −10 dB
Output voltage and impedance	
REC OUT	150 mV
Channel balance, AUX 250 Hz~6,300 Hz	±1 dB
Channel separation, AUX 1 kHz	55 dB
Headphones output level and impedance	400 mV/330Ω
Load impedance	4Ω~16Ω

■ GENERAL

Power consumption	400W
Power supply	
For Australia	AC 50 Hz/60 Hz, 240V
For continental Europe	AC 50 Hz/60 Hz, 220V
For others	AC 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (W×H×D)	315 × 98.9 × 248 mm
	(12-13/32" × 3-29/32" × 9-3/4")
Weight	5.6 kg
	(12.3 lb.)

Note:
Total harmonic distortion is measured by the digital spectrum analyzer (H.P. 3045 system).

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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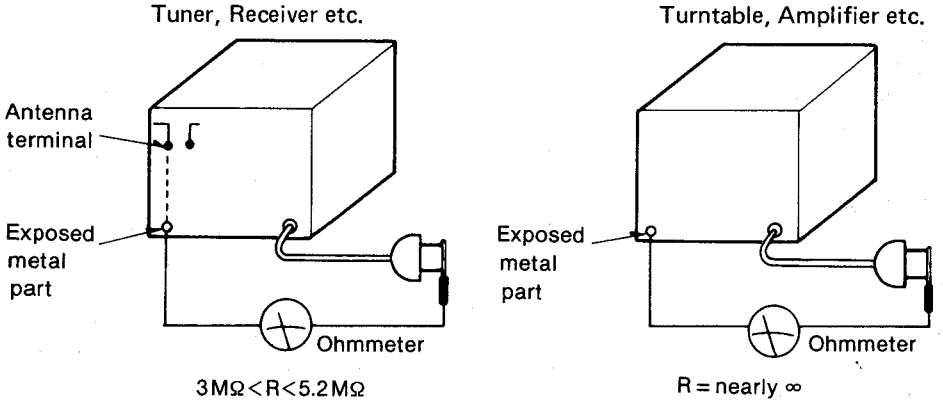
■ SAFETY PRECAUTION

1. Before servicing (such as replacement of components), unplug the power supply cord to prevent an electric shock.
2. Use only manufacturer's recommended components for safety. Check condition of power cord and replace if wear or damage is evident.
3. After servicing, be sure to restore the following to the condition in which they were originally installed.
   (1) the lead dress and
   (2) insulation barriers, insulation papers, shields and the like.
4. Before returning a serviced apparatus to a customer, make the following insulation resistance test to prevent a customer from being exposed to a shock hazard.

- **Insulation resistance test (See figure below.)**

1. Unplug the power supply cord and connect a jumper wire between the two prongs on the plug.
2. Turn on the power switch of the apparatus.
3. Measure the resistance value (with an ohmmeter) between the jumpered AC plug and each exposed metalic cabinet part on the apparatus, such as screwheads, antenna, control shafts, handle brackets, etc.
   The reading should be as shown in figure below. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the apparatus should be repaired and rechecked before it is returned to a customer.



where, R: resistance value

■ PROTECTION CIRCUITRY

The protection circuitry may have operated if either of the following conditions is noticed:

- No sound is heard when the power is turned on.
- Sound stops during a performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted", or if speaker systems with an impedance less than the indicated rated impedance of this unit are used.

If this occurs, follow the procedure outlines below:

1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again after one minute.

Note

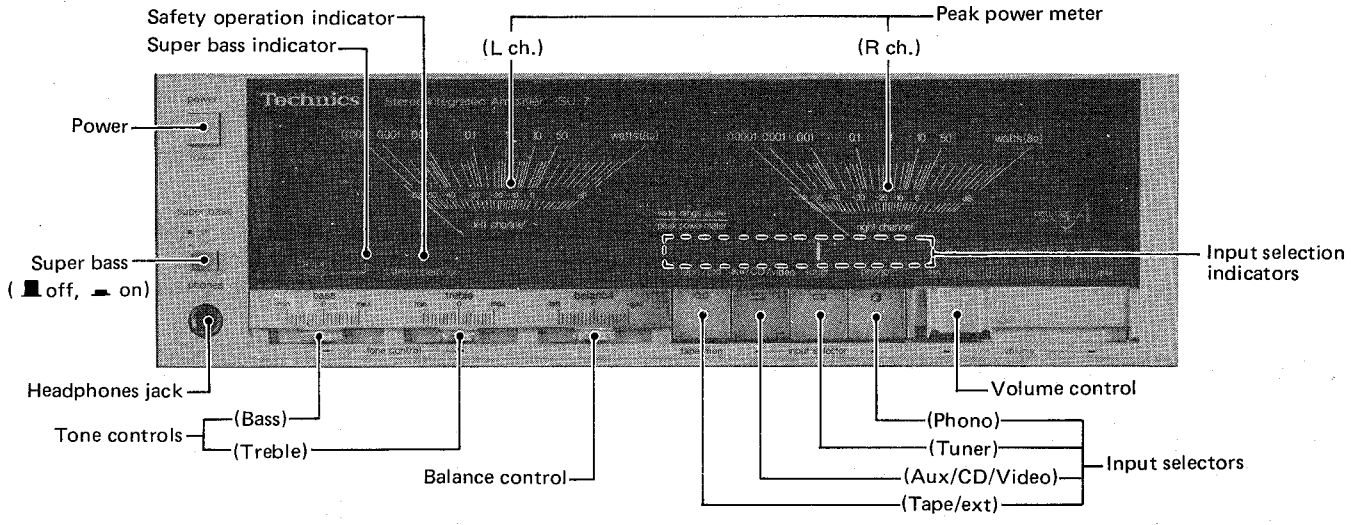
When the protection circuitry functions, the unit will not operate unless the power is first turned off and then on again.

■ BEFORE REPAIR AND ADJUSTMENT

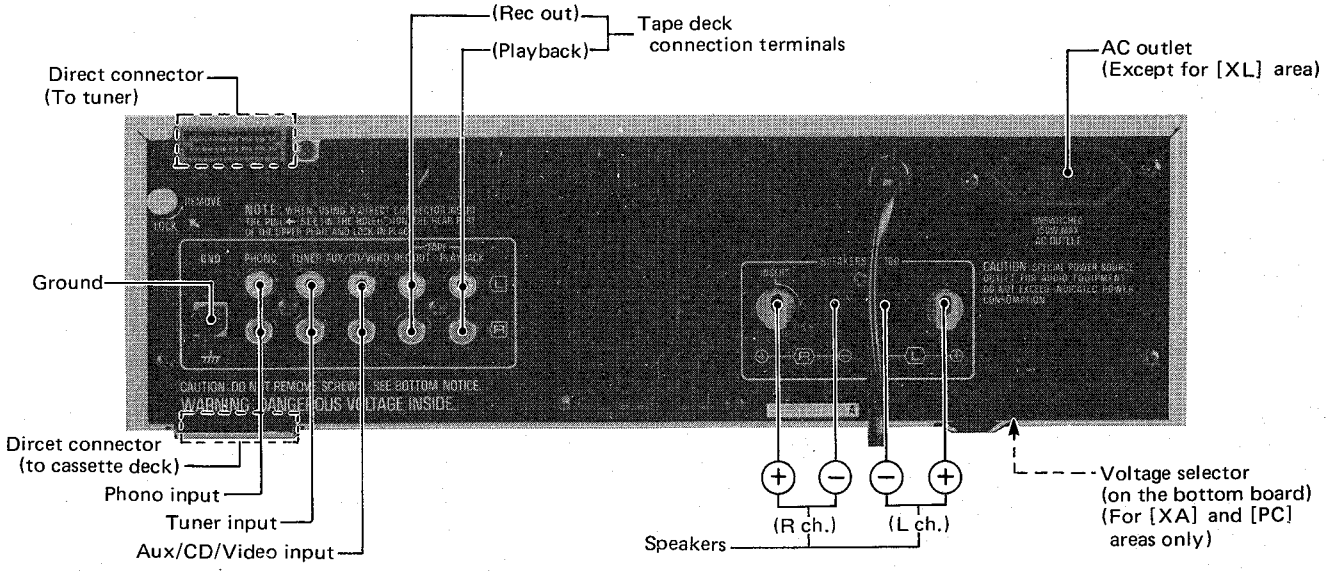
1. Turn off the power supply and short-circuit both ends of power supply condensers (C402, C403, 8200μF) at resistance (about 10Ω, 5W) in order to discharge the charged voltage. Both ends of do not short between C402 and C403 by screwdriver. It may damage the component.
2. Before turning on the power supply after completion of repair, slowly apply the primary voltage by using a power supply voltage controller to make sure that the consumed current is free of abnormality. The consumed current 60Hz/50Hz in no signal mode is shown below with respect to supply voltage 110V/120V/220V/240V.

Power supply voltage		AC110V	AC120V	AC220V	AC240V
Consumed current	50 Hz	125~380mA	110~340mA	65~190mA	55~170mA
	60 Hz	120~360mA	105~320mA	60~180mA	50~160mA

■ LOCATION OF CONTROLS



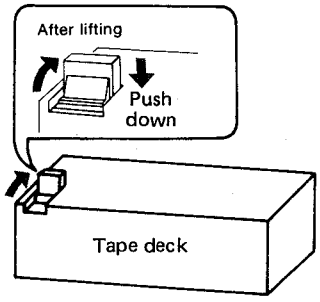
● **Safety Operation Indicator**
It lights up when the unit is in operation.
If the wires led from the speaker terminals are shortcircuited or DC voltage is generated, the protection circuit functions and then the operation goes out.



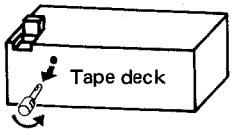
● The power supply for this unit varies depending upon the areas. Also, the parts used for power supply are different. So, refer to the circuit diagram and the replacement parts list.
* 220V (50/60Hz) for continental Europe.
* 240V (50/60Hz) for Australia.
* 110V/120V/220V/240V (50/60Hz) for other areas.
—([XA] and [PC] areas) for other areas is provided with voltage selector.
* Phono input capacitance is about 150pF.

■ STANDARD CONNECTION METHOD WITH DIRECT CONNECTOR

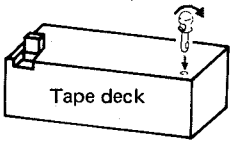
① Lift the direct connector on the tape deck. Push it straight down to lock it into place.



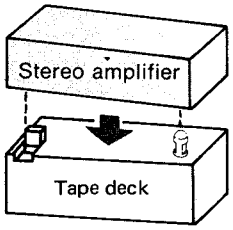
② Remove the stabilizing pin from the back panel. (Turn counterclockwise 90° and pull.)



③ Insert the pin into the top panel. (Push in and turn clockwise 90°.)



④ Lower the amplifier onto the tape deck. Line up the direct connector and stabilizing pin properly.

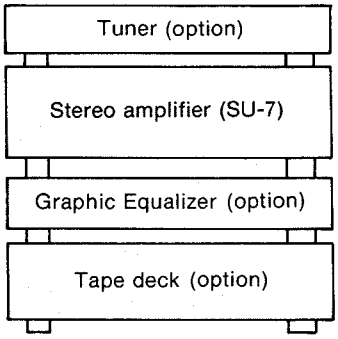


⑤ Connect the tuner to the amplifier the same way as in ① ~ ④.

⑥ Connect the turntable and speakers with their respective cords.

Notes:

1. When using the direct connectors, do not use pin cords.
2. When using the graphic equalizer (SH-E5), place it between the amplifier and the tape deck.

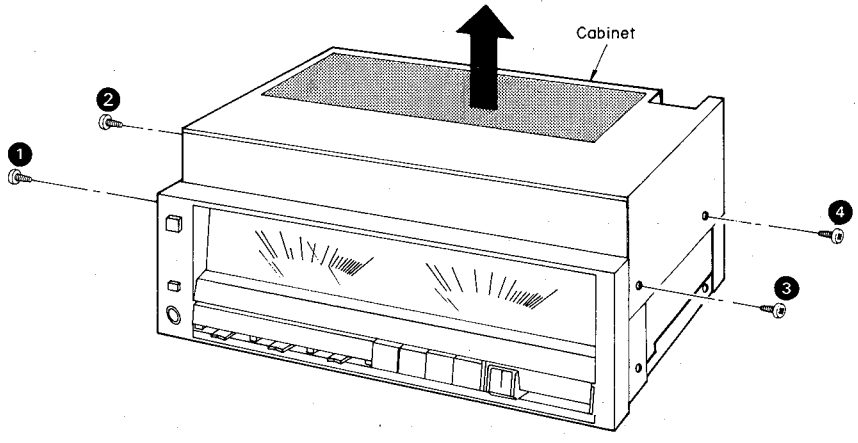


3. Position the units in a straight column to avoid twisting and breaking the direct connectors.

■ DISASSEMBLY INSTRUCTIONS

• How to remove the cabinet

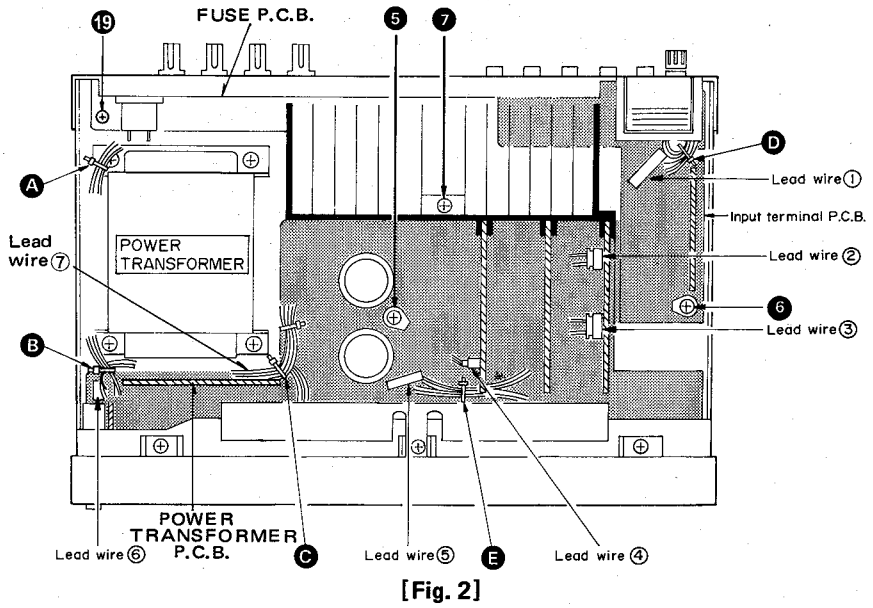
1. Remove the 4 setscrews (Fig. 1 ❶ ~ ❹) of the cabinet.
2. Move the cabinet in the direction of the arrow in Fig. 1.



[Fig. 1]

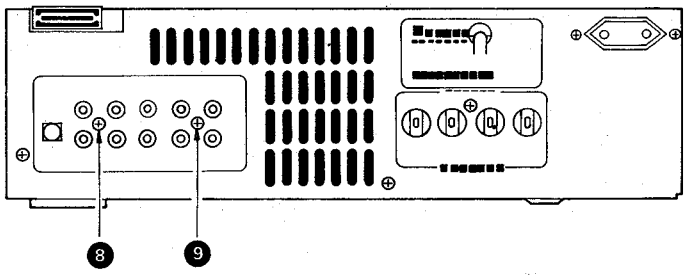
• How to remove the main printed circuit board

1. Remove the cabinet. (Refer to "How to remove the cabinet.")
2. Remove the setscrew [Fig. 2: ❺] of main P.C.B., the setscrew [Fig. 2: ❻] of input terminal P.C.B. the setscrew [Fig. 2: ❼] of heat sink, the 2 setscrews [Fig. 3: ❽, ❾] of input terminal plate and the setscrew [Fig. 2: ⓳] of fuse P.C.B. totalling 6 setscrews.
3. Next, cut off the 4 lead clampers [Fig. 2: Ⓐ ~ Ⓓ] by use of nippers.
   Then move the liead wire ⑥ and ⑦ which are located between POWER TRANSFORMER P.C.B. and POWER TRANSFORMER upward.
4. Pull out the lead wire [Fig. 2: lead wire ①] and the direct connector of rear panel. [Fig. 4]
5. Remove the 2 setscrews [Fig. 4: ⓫ , ⓬] which secure the front panel from the bottom.

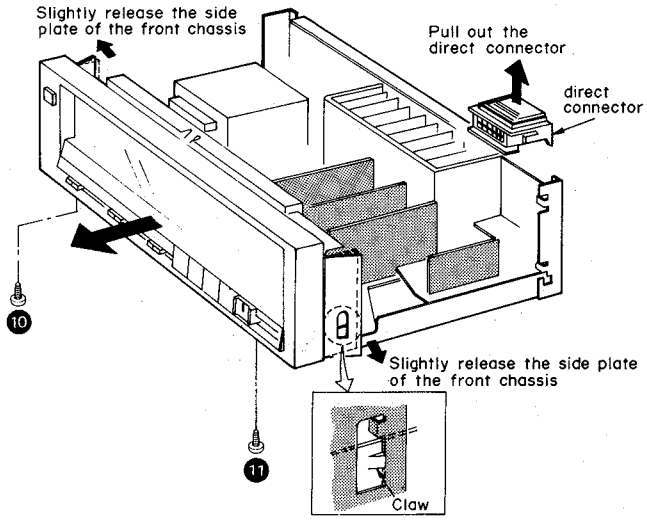


[Fig. 2]

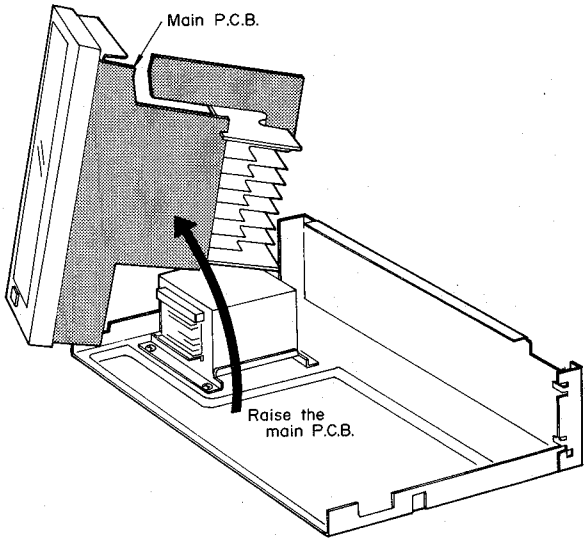
6. Remove the setscrew [Fig. 6: ⑫] of the thermistor retainer.
7. Slightly release the side plate of the front chassis to pull out the front panel toward you. [Fig. 4]
8. Raise the main P.C.B. as shown in Fig. 5.



[Fig. 3]


Slightly release the side plate of the front chassis
Pull out the direct connector
direct connector
⑩
Slightly release the side plate of the front chassis
⑪
Claw

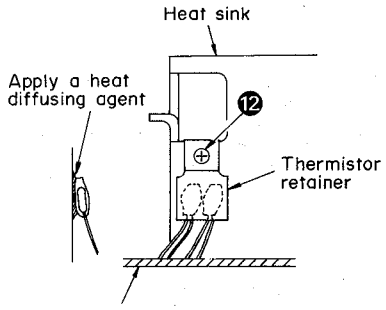
[Fig. 4]



[Fig. 5]

NOTE

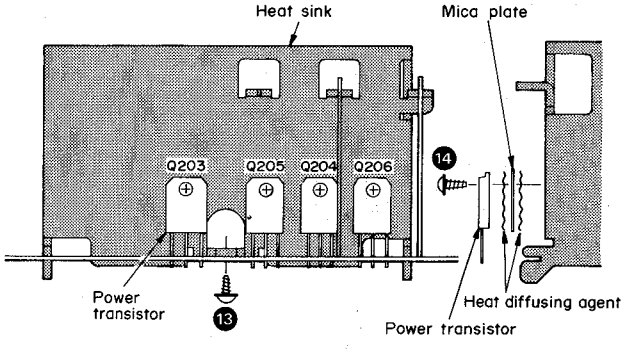
After completing the repair, apply a heat diffusing agent to the thermistor as in Fig. 6, and secure the thermistor with the retainer, pressing it against the heat sink.



[Fig. 6]

- **How to remove the power transistor**

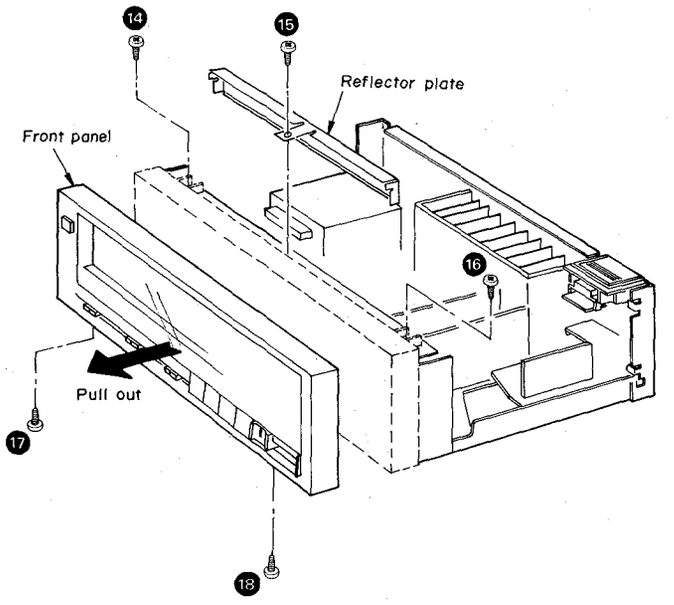
1. Remove the cabinet and main printed circuit board. (Refer to "How to remove the main printed circuit board.")
2. Unsolder the power transistor.
3. Remove the setscrew (Fig. 7 ⑬) of heat-sink and then lift the heat-sink along with the power transistor.
4. Remove the setscrew (Fig. 7: ⑭) used to secure the power transistor on the heat-sink, and then pull out the power transistor.
5. When installing the power transistor, apply heat diffusing agent (silicon poweder, etc.) to both sides of the mica plate, and secure it on the heat-sink with setscrews. Next, secure the heat-sink on the chassis and then solder the power transistors.



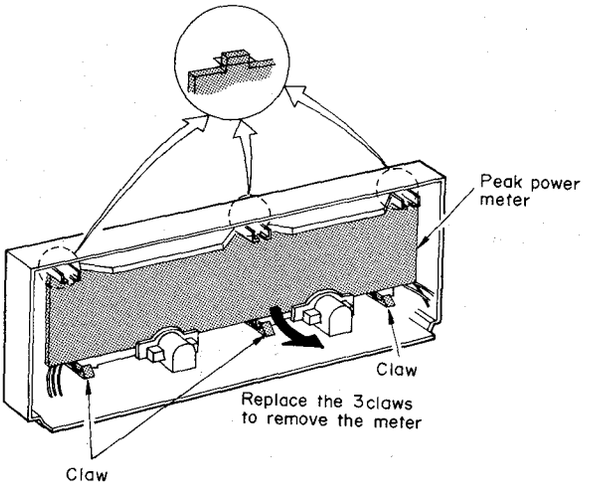
[Fig. 7]

- **How to remove the front panel and the peak power meter**

1. Remove the cabinet. (Refer to "How to remove the cabinet.")
2. Disconnect the 5 lead wires [Fig. 2: Lead wire ② ~ ⑥]
3. Cut off the 3 lead clampers [Fig. 2: Ⓑ , Ⓒ , Ⓔ]
4. Remove the 5 setscrews [Fig. 8: ⑭ ~ ⑱] of the front panel, and then remove the front panel with care not to damage the lead wires.
5. Release the 3 claws which fasten the peak power meter, then remove the meter. [Fig. 9]

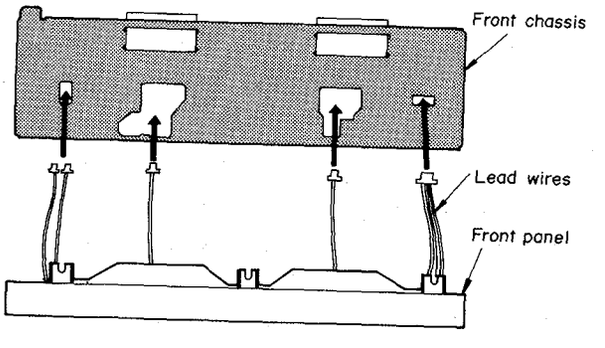


[Fig. 8]

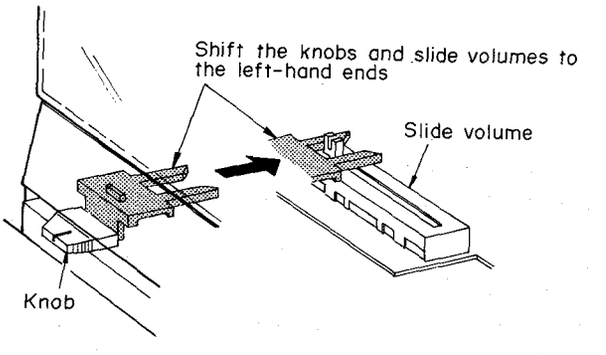


[Fig. 9]

6. When installing the peak power meter, set the meter into the 3 holes at the front panel top, and fasten the panel with the 3 claws at the bottom. [Fig. 9]
7. To fit the front panel, arrange the lead wires through the holes in the front chassis as in Fig. 10 to bring them inside the chassis. Next, fit the front panel in place, shifting the 4 slide volumes and knobs to the left-hand ends. [Fig. 11]



[Fig. 10]



[Fig. 11]

NOTE

Carefully handle the peak power meter not to bend the needle or to allow dust sticking to the indication plate surface.

- **How to remove the slide volume knob**

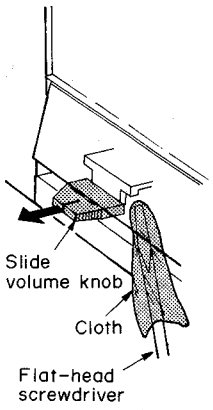
1. When removing the slide volume knobs (bass, treble, balance, sound volume), shift the knobs to the left-hand ends, and then remove them by use of a flat-head screwdriver wrapped with cloth. [Fig. 12]
2. The knob should be fitted with the longer sides up.

- **How to remove the input selector switch knob**

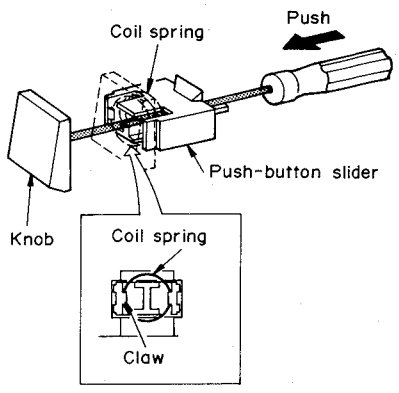
1. Before removing the input selector switch knob, remove the front panel and peak power meter (Refer to "How to remove the front panel and peak power meter"), and then remove the knob from the back of the front panel by use of a screwdriver as in Fig. 13.
2. To install the knob, insert the coil spring into the push-button slider (let it engage with the claw of push-button slider) as in Fig. 13 and then fasten the knob with the claw of the slider.

- **How to remove the direct connector (tuner side)**

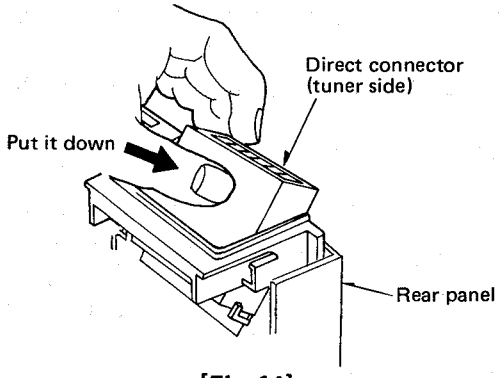
1. Remove the cabinet.
2. Push down the direct connector (tuner side) as shown in Fig. 14.
3. When installing, push it in the opposite direction.



[Fig. 12]



[Fig. 13]



[Fig. 14]

■ HOW TO CHECK THE DRIVE CIRCUIT (P.C.B. E)

Symptoms	Presumptive cause	Check method
No output (Open circuit of primary fuse)	① Short-circuit of Power Transistor (Q203 ~ 206) ② Open-circuit of Temperature Detector Transistor (Q201, 202) ③ Short-circuit of Drive IC (IC201, 202)	* Turn off the power switch ① Check the resistance of C-E and C-B of Q203 ~ Q206 ↓ ② Check Q201, 202 ↓ ③ Replace IC201, 202
No output (Not indicate the safety operation LED and No operation of Relay)	① No positive voltage (+44.2V) ② Fault of Protection Circuit IC (IC501) ③ Fault of Drive IC (IC201, 202)	* Turn on the power switch ① Check the emitter voltage (+44.2V) of Q441 ↓ * Turn off the power switch ② Check R725 ↓ * Turn on the power switch ③ Check the voltage (Over then 2.5V) at pin number ② and voltage (+23V) at pin number ⑥ of IC501 ↓ * Turn off the power switch ④ Check the Power Transistor Q203 ~ 206 ↓ ⑤ Replace IC201, 202
Distorted Sound	① No negative voltage (–44.2V) ② Open circuit of Power Transistor (Q203 ~ 206) ③ Open circuit of Drive IC (IC201, 202)	* Turn on the power switch ① Check the emitter voltage (–44.2V) of Q442 ↓ ② Check the Power Transistor (Q203 ~ 206) ↓ ③ Replace IC201, 202

To be continued 7

Symptoms	Presumptive cause	Check method
Remaining Hum and Oscillation Noise	① Fault of Drive IC (IC201, 202)	* Turn off the power switch ① Check the soldering condition of each Capacitor (C207 ~ C216) and Resistor (R215 and R216) in phase compensation circuit ↓ ② Replace IC201, 202
No output (Indicate the safety operation LED with Relay operating)	① No positive and negative voltage (±44.2V)	* Turn on the power switch ① Check the emitter voltage (±44.2V) of Q441 and Q442 ↓ * Turn off the power switch ② Check R725 and R726 ↓ ③ Replace IC201, 202

■ MEASUREMENTS AND ADJUSTMENTS

• Idling (I_{CQ}) adjustment

1. After repair of main amplifier, turn the sound volume to the minimum level before turning on the power supply.
2. Completely turn the semi-fixed resistors (VR201, VR202) for I_{CQ} adjustment counterclockwise.
3. Next, slowly raise the supply voltage from 0V by the power supply voltage controller, make sure that the consumed current is free of abnormality. The consumed current at 60Hz/50Hz in no signal mode is shown below with respect to supply voltage 110V/120V/220V/240. (Refer to Fig. 15)

Power supply voltage		AC110V	AC120V	AC220V	AC240V
Consumed current	50 Hz	125~380mA	110~340mA	65~190mA	55~170mA
	60 Hz	120~360mA	105~320mA	60~180mA	50~160mA

4. Connect a DC voltmeter to TP1 and TP2 (left channel) or TP3 and TP4 (right channel). (Refer to Fig. 16).
5. Set the power switch to "on" and adjust VR201 (left channel) or VR202 (right channel) so that 5 minutes later the voltage at each test point is 1.2 mV.

NOTE

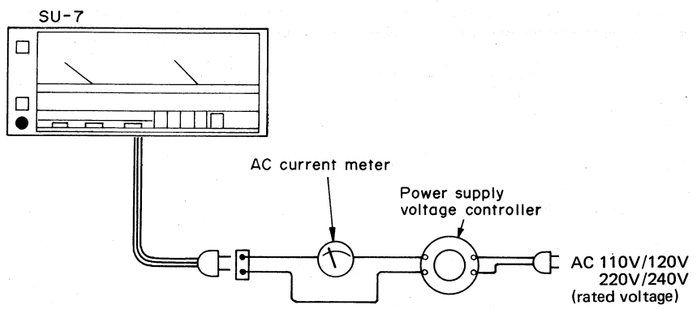
I_{CQ} does not flow for 2 ~ 4 sec. after setting the power switch to "on" due to muting during power on-off operation.

• Adjustment of peak power meter

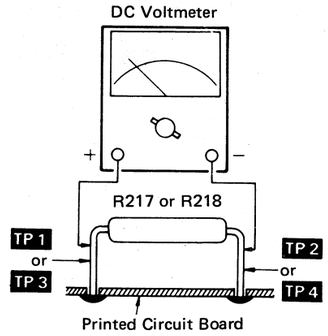
1. Connect a dummy resistor of 8Ω or a speaker of 8Ω impedance to the speaker terminal, and turn the power switch "on". [Fig. 17]
2. Apply 1kHz sine wave to the AUX/CD/VIDEO terminal.
3. Set the sound volume to the maximum level, and adjust the input so that the output to the speaker terminal is 2.83V.
4. Adjust both channels of VR601 (L channel) and VR602 (R channel) so that the meter reading is 1W. [Fig. 18]

• *Check of muting circuit during power on-off operation*

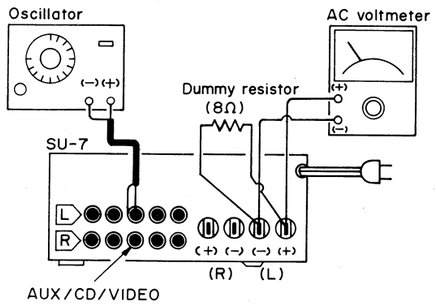
1. Connect 8Ω load to the speaker terminal.
2. Apply 1kHz 100mV signal to the "AUX/CD/VIDEO" terminal.
3. Make sure that output is delivered about 2 ~ 4 sec. after turning the power switch "on".
4. Output should Immediately be gone when power switch is turned "off".



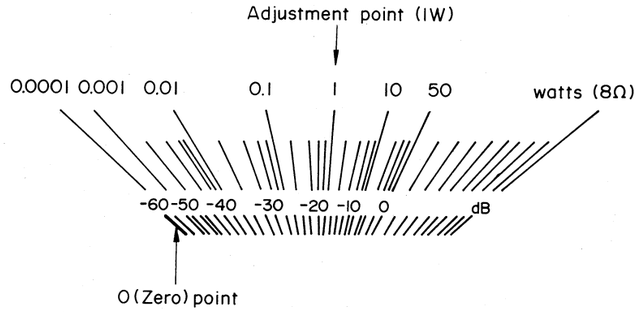
[Fig. 15]
How to check power consumption



[Fig. 16]
Idling (I_{CQ}) adjustment

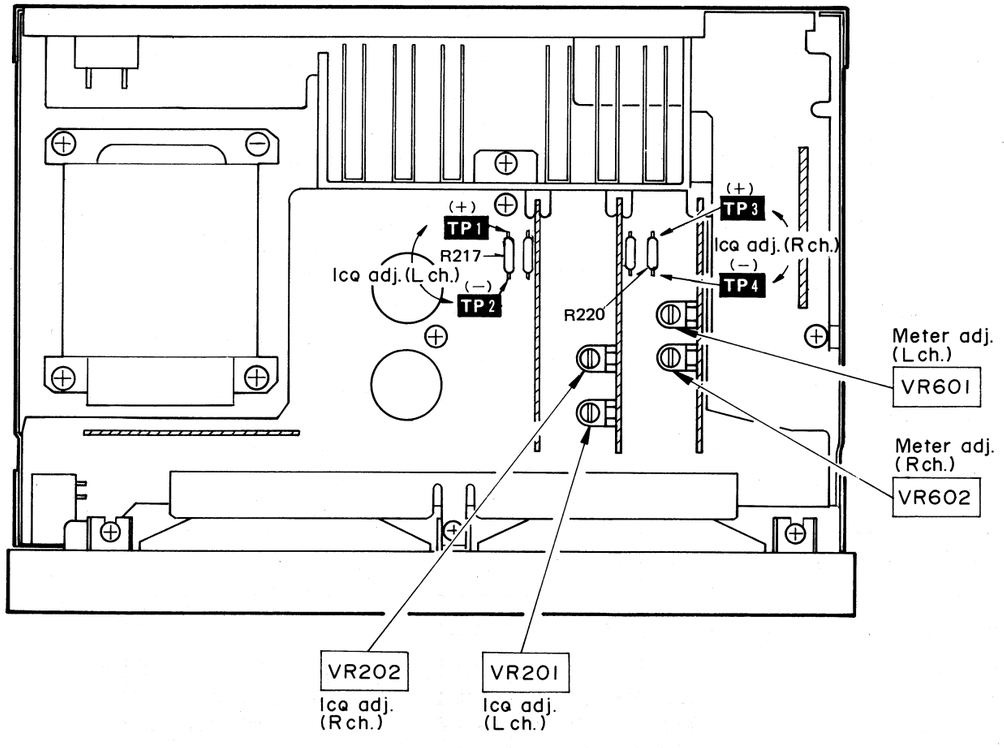


[Fig. 17]
Adjustment of peak power meter

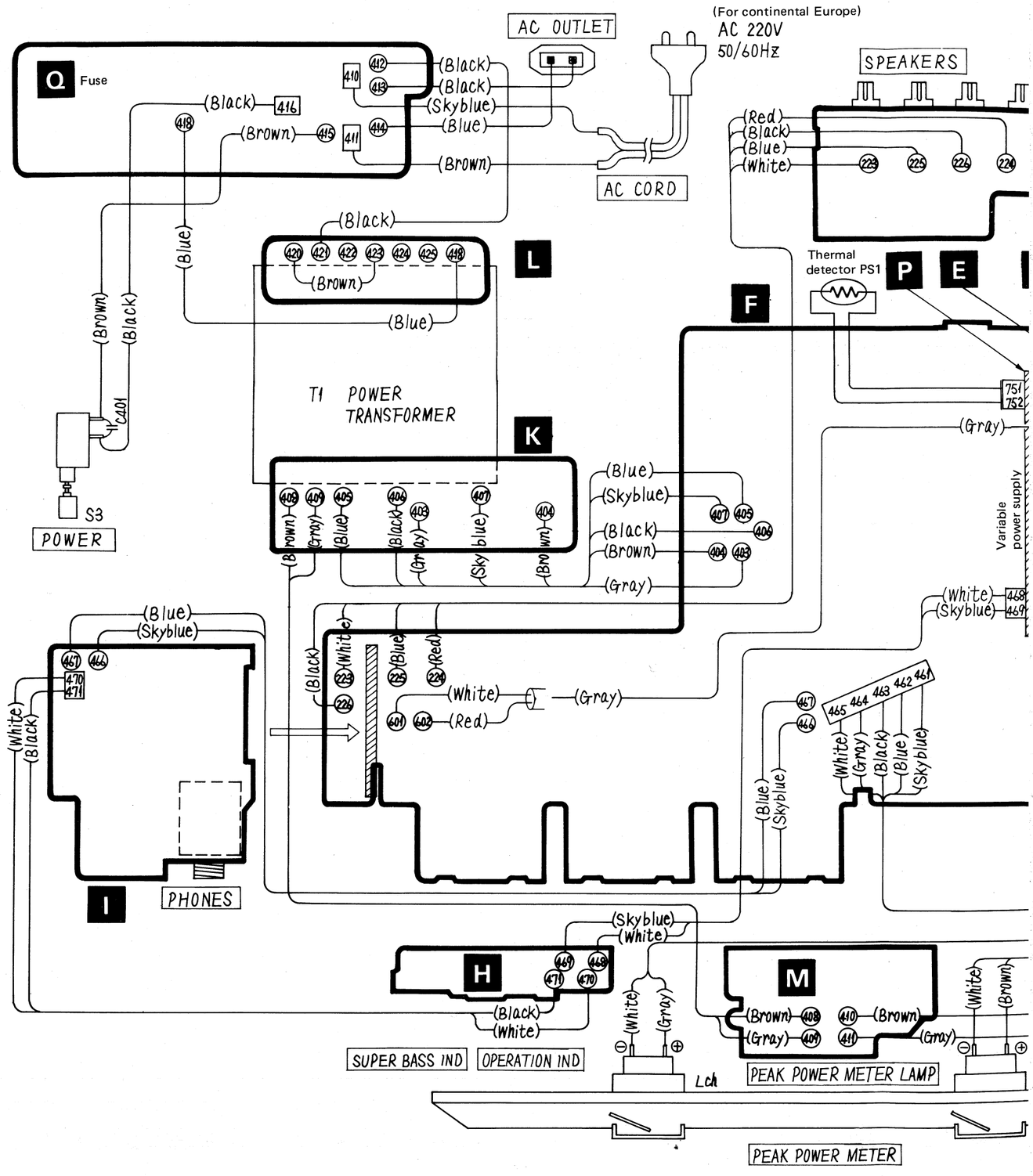


[Fig. 18]
Peak power meter

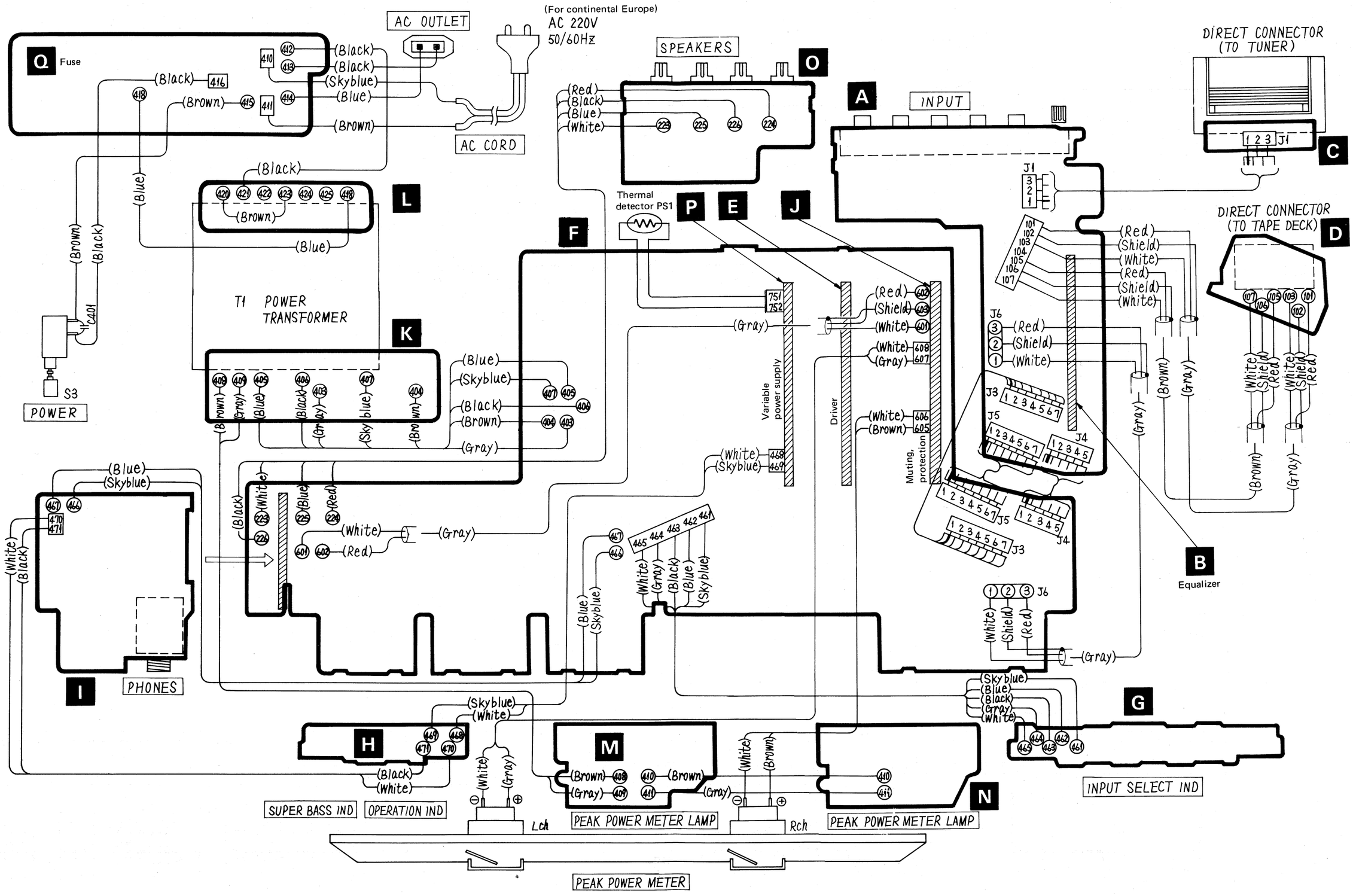
- **Adjustment points**



■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM (Top View)



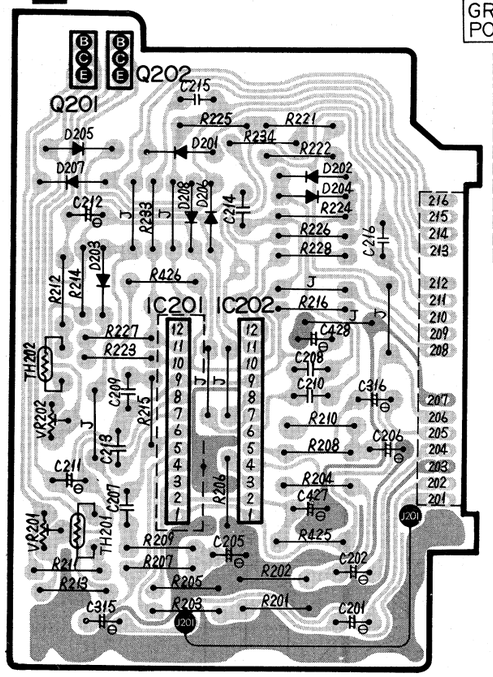
■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM (Top View)



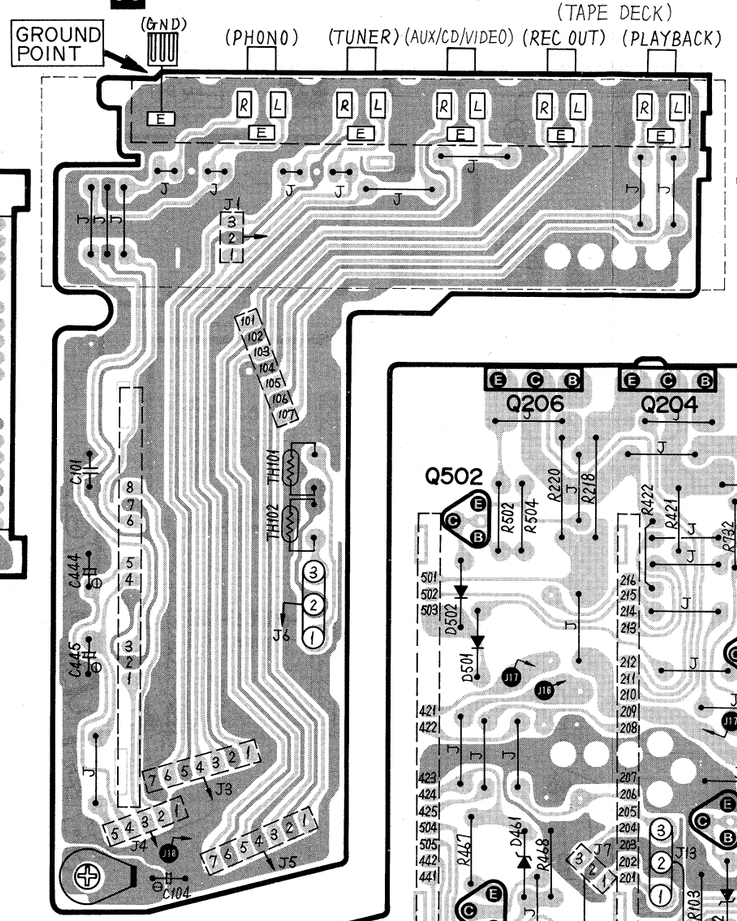
■ PRINTED CIRCUIT BOARDS

Ground (Earth) lines

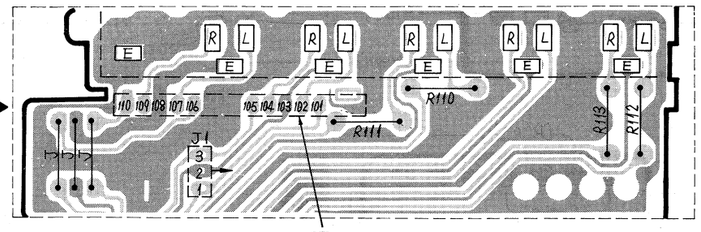
E Drive circuit P.C.B.



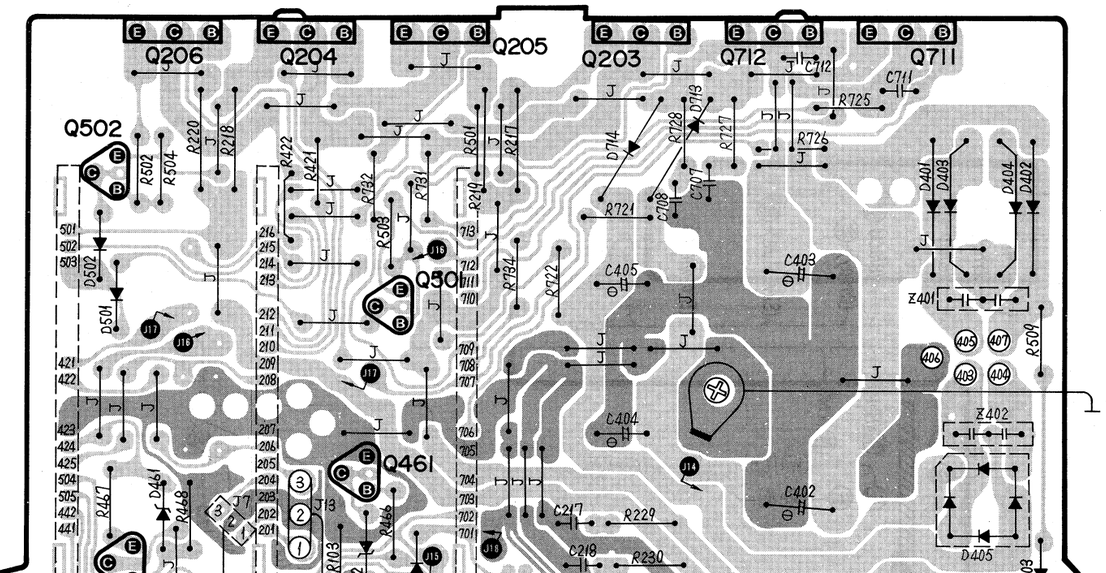
A Input terminal P.C.B.



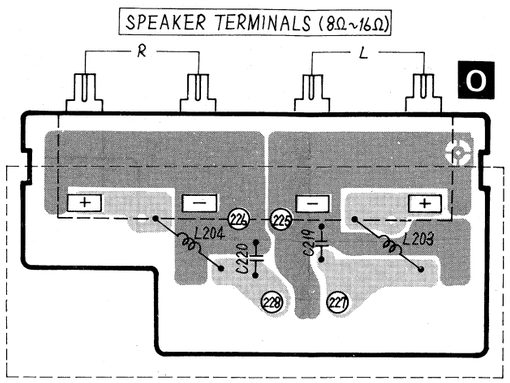
● **Product for F.R. Germany [EGA] only.**
[The circuit diagram of this P.C.B. is mentioned on page 7 of separate service manual (Order No. SD83012369C9—A)]

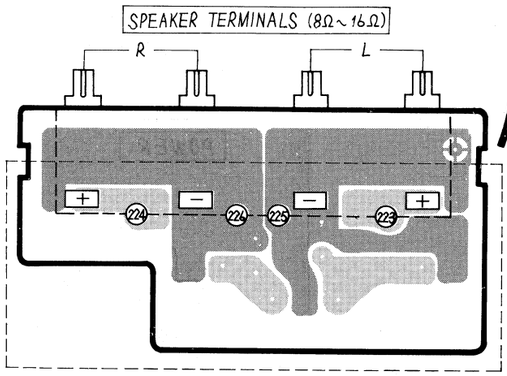


R

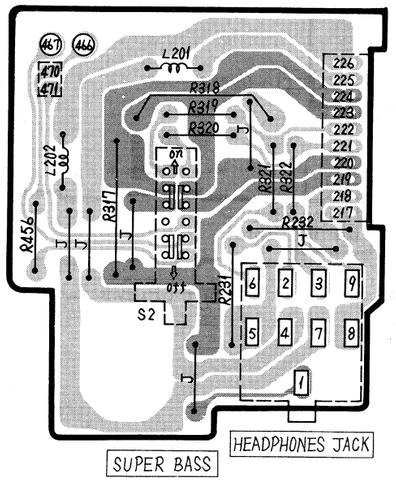


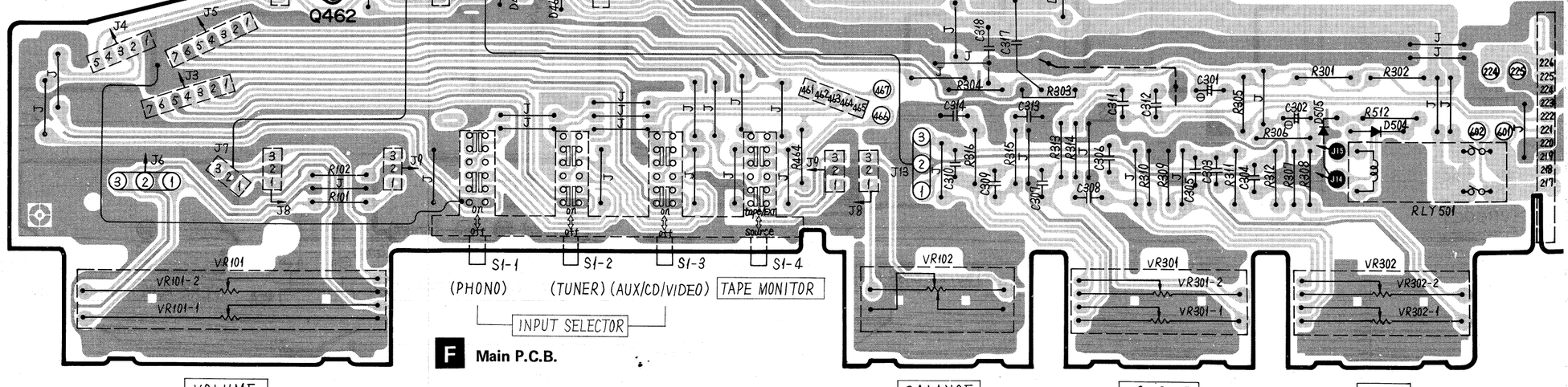
● **Product for F.R. Germany [EGA] only.**
[The circuit diagram of this P.C.B. is mentioned on page 6 of separate service manual (Order No. SD83012369C9—A)]





I Headphones jack P.C.B.

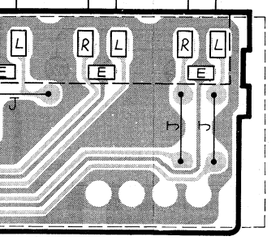




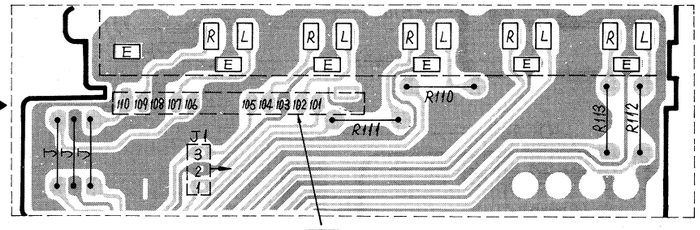
F Main P.C.B.

) lines

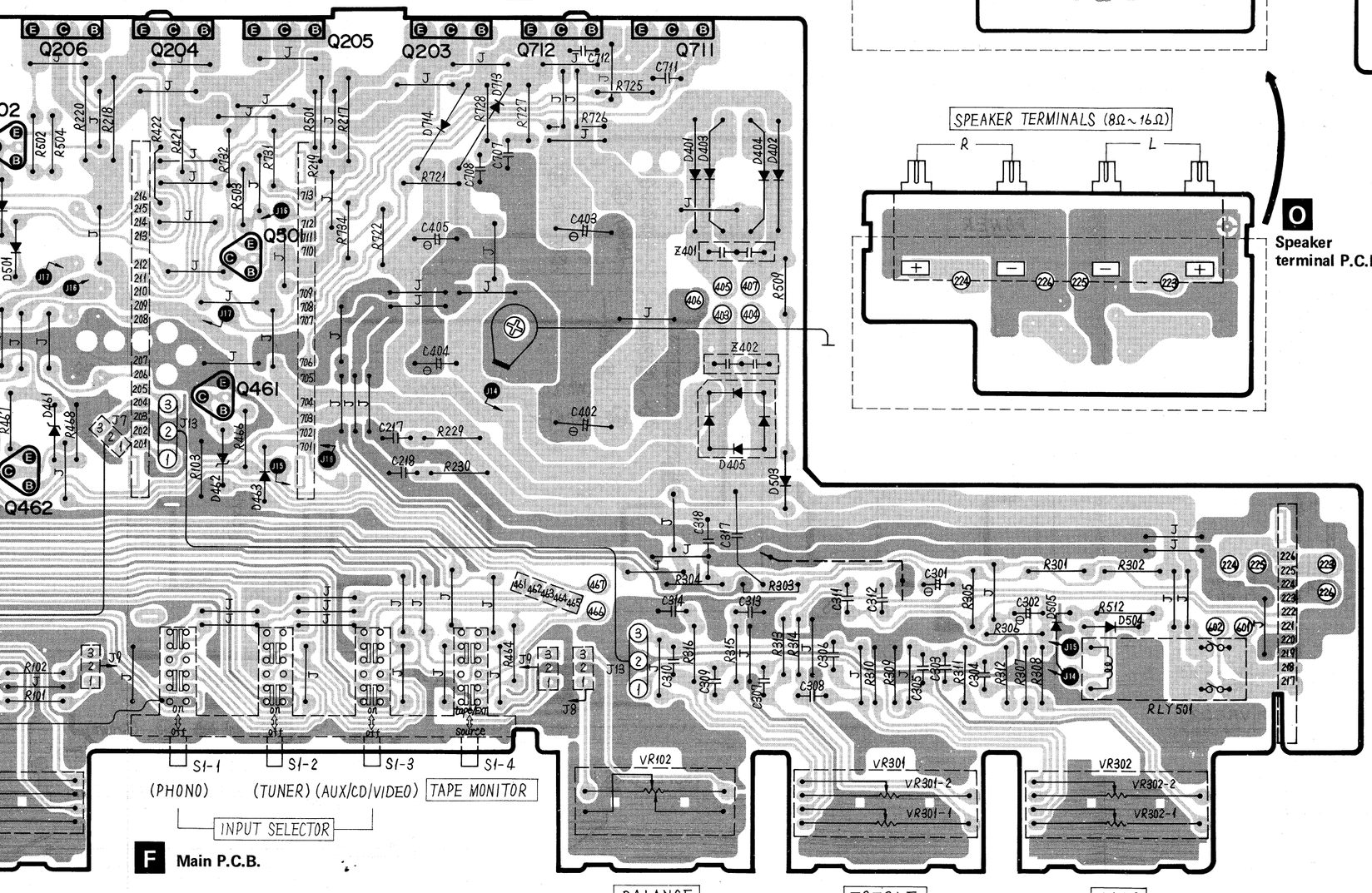
(TAPE DECK)
/VIDEO) (REC OUT) (PLAYBACK)



● **Product for F.R. Germany [EGA] only.**
[The circuit diagram of this P.C.B. is mentioned on page 7 of separate service manual (Order No. SD83012369C9–A)]

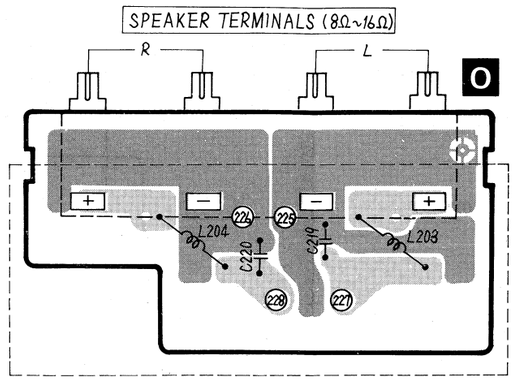


R



F Main P.C.B.

● **Product for F.R. Germany [EGA] only.**
[The circuit diagram of this P.C.B. is mentioned on page 6 of separate service manual (Order No. SD83012369C9–A)]

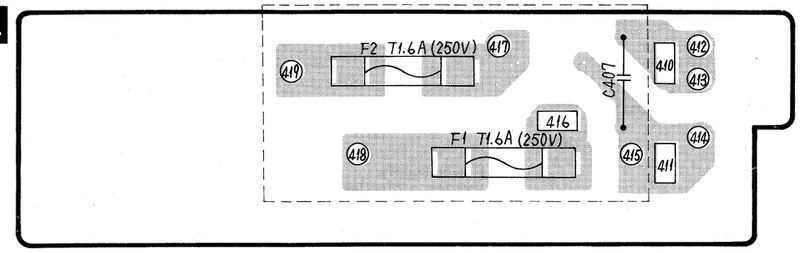


O

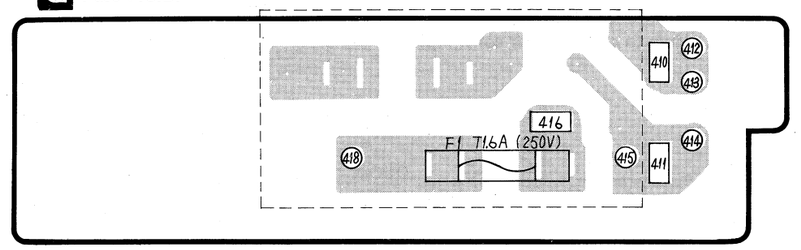
O Speaker terminal P.C.B.

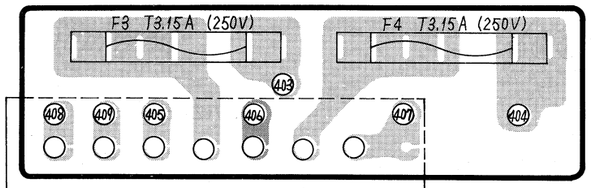
● **Product for F.R. Germany [EGA] only**
[The circuit diagram of this P.C.B. is mentioned on page 6 of separate service manual (Order No. SD83012369C9–A)]

Q

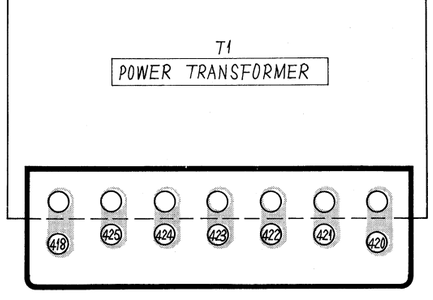


Q Fuse P.C.B.

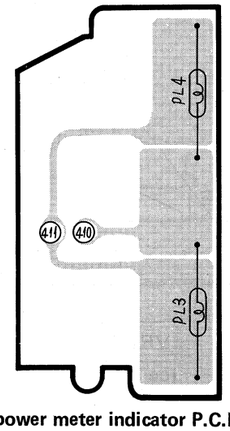




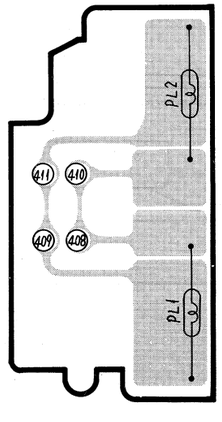
K Power transformer P.C.B.



L Power transformer P.C.B.



N Peak power meter indicator P.C.B.



M Peak power meter indicator P.C.B.

ORDER NO. SD83012369C9—A

Stereo Integrated Amplifier SU-7/SU-7(K)

- This booklet contains the specifications and adjusting procedures for SU-7, written Germany, French and Spanish, and the circuits to be changed according to areas.
- File this manual together with the SU-7 service manual (Order No. SD83012369C9).

- Diese Broschüre enthält die technischen Daten und die Beschreibungen der Justiermethoden für SU-7 in deutscher, französischer und spanisher Sprache, sowie die entsprechend dem Gebiet zu ändernden Schaltungen.
- Bewahren Sie das Büchlein zusammen mit der Bedienungsanleitung für SU-7 (Bestell-Nr. SD83012369C9) auf.

- Cette brochure contient les spécifications et les procédures de réglage pour le SU-7, écrites en allemand, en français et en espagnol et explique les circuits devant être modifiés selon les régions.
- Classer ce manuel en même temps qu'avec le manuel de service du SU-7 (N° d'ordre : SD83012369C9).

- Este librito contiene las especificaciones y procedimientos de ajuste para SU-7, escritas en alemán, francés y español, y los circuitos a cambiarse según las áreas.
- Guardar este manual juntamente con el manual de servicio de SU-7 (Pedido N°. SD83012369C9).

DEUTSCH

■ TECHNISCHE DATEN (Spezifikationen Können infolge von Verbesserungen ohne Ankündigung geändert werden.)

(DIN 45 500)

■ VERSTÄRKERTEIL

Dauerton-Ausgangsleistung bei 20 Hz ~ 20 kHz	
beide Kanäle ausgesteuert	2 × 50W (4 Ω)
	2 × 50W (8 Ω)
Dauerton-Ausgangsleistung bei 1 kHz	
beide Kanäle ausgesteuert	2 × 50W (4 Ω)
	2 × 50W (8 Ω)
Gesamtklirrfaktor	
Nennleistung bei 20 Hz ~ 20 kHz	0,07% (4 Ω)
	0,03% (8 Ω)
Nennleistung bei 1 kHz	0,01% (4 Ω)
	0,005% (8 Ω)
halbe Nennleistung bei 20 Hz ~ 20 kHz	0,03% (4 Ω)
	0,02% (8 Ω)
halbe Nennleistung bei 1 kHz	0,009% (4 Ω)
	0,005% (8 Ω)
−26 dB Leistung bei 1 kHz	0,01% (4 Ω)
50 mW Leistung bei 1 kHz	0,01% (4 Ω)
Intermodulationsfaktor	
Nennleistung bei 60 Hz: 7 kHz = 4:1, nach SMPTE, 8 Ω	0,03%
Leistungsbandbreite	
beide Kanäle ausgesteuert bei −3 dB	10 Hz ~ 25 kHz (8 Ω)
Restbrumm und Geräusch	0,8 mV
Dämpfungsfaktor	30 (8 Ω)
Eingangsempfindlichkeit und -impedanz	
Phono	2,5 mV/47 kΩ
Tuner, Aux/CD/Video	150 mV/27 kΩ
Tape	150 mV/27 kΩ
Maximale TA-Eingangsspannung (1 kHz, eff.)	150 mV
Frequenzgang	
Phono	RIAA-Standardkurve
	±0,8 dB (30 Hz ~ 15 kHz)
Tuner, Aux/CD/Video, Tape	10 Hz ~ 100 kHz (−3 dB)
Geräuschabstand	
Nennleistung (4 Ω)	
Phono	79 dB (nach IHF, A: 81 dB)
Tuner, Aux/CD/Video, Tape	88 dB (nach IHF, A: 99 dB)
−26 dB Leistung (4 Ω)	
Phono	62 dB
Tuner, Aux/CD/Video, Tape	62 dB
50 mW Leistung (4 Ω)	
Phono	62 dB
Tuner, Aux/CD/Video, Tape	62 dB
Klangregler	
Baßregler (BASS)	50 Hz, +10 dB ~ −10 dB
Höhenregler (TREBLE)	20 kHz, +10 dB ~ −10 dB
Ausgangsspannung und -impedanz	
Aufnahmeausgang (REC OUT)	150 mV
Kanalabweichung (Aux, 250 Hz ~ 6300 Hz)	±1 dB
Übersprechdämpfung (Aux, 1 kHz)	55 dB
Kopfhörerpegel und -impedanz	400 mV/330 Ω
Lautsprecherimpedanz	4 Ω ~ 16 Ω

■ ALLGEMEINE DATEN

Leistungsaufnahme	400 W
Netzspannung	
Für Kontinentaleuropa	Wechselstrom 50 Hz/60 Hz, 220V
Für andere Länder	Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V
Abmessungen (B×H×T)	315 × 98,9 × 248 mm
Gewicht	5,6 kg

Bemerkung:
Der Gesamtklirrfaktor wurde mit einem digitalen Rauschspektrometer (Anlage H.P. 3045) gemessen.

■ MESSUNGEN UND JUSTIERUNGEN

- **Leerlauf-(ICQ)-Einstellung**

1. Nach der Reparatur des Hauptverstärkers, den Lautstärkeregler auf Minimum zurückdrehen, bevor die Stromzufuhr eingeschaltet wird.
2. Die halbfest eingestellten Widerstände (VR201, VR202) für den ICQ-Abgleich entgegen dem Uhrzeigersinn drehen.
3. Anschließend mit dem Stromversorgungs-Spannungsregler die Versorgungsspannung von 0V langsam anheben und dabei sicherstellen, daß der verbrauchte Strom frei von jeglicher Abnormalität ist. Der verbrauchte Strom bei 60Hz/50Hz im signallosen Zustand ist nachstehend für die Versorgungsspannungen 110V/120V/220V/240V gezeigt. (Siehe Abb. 15)

Stromversorgungs-Spannung		AC110V	AC120V	AC220V	AC240V
Verbrauchter Strom	50Hz	125 ~ 380mA	110 ~ 340mA	65 ~ 190mA	55 ~ 170mA
	60Hz	120 ~ 360mA	105 ~ 320mA	60 ~ 180mA	50 ~ 160mA

4. Ein Gleichstrom-Voltmeter an TP1 und TP2 (linker Kanal) oder TP3 und TP4 (rechter Kanal) anschließen (siehe Abb. 16).
5. Den Netzschalter auf "ON" stellen, und VR201 (linker Kanal) oder VR202 (rechter Kanal) so abgleichen, daß die Spannung an jedem Testpunkt 5 Minuten später 1.2mV beträgt.
   Anmerkung: ICQ fließt nicht während 2 ~ 4 Sekunden nach Einschalten des Netzschalters, wegen der Stummschltung während des Ein- und Ausschaltens der Stromzufuhr.

- **Justierung des Spitzenwert-Leistungsmessers**

1. Einen Ersatzwiderstand von 8Ω oder einen Lautsprecher von 8Ω Impedanz an den Lautsprecheranschluß anschließen, und den Netzschalter auf "ON" stellen. (Abb. 17)
2. Eine 1kHz-Einzelwelle an den AUX/CD/VIDEO-Anschluß anlegen.
3. Die Lautstärke auf Maximum einstellen und die Eingangsleistung so aussteuern, daß die Ausgangsleistung zum Lautsprecher-Anschluß 2,83V beträgt.
4. Beide Kanäle von VR601 (L. Kanal) und VR602 (R. Kanal) so abgleichen, daß die Anzeige des Meters 1W beträgt. (Abb. 18)

- **Überprüfung der Stummschaltung während Ein- und Ausschalten der Stromzufuhr**

1. Eine 8Ω-Last an den Lautsprecher-Anschluß anschließen.
2. Ein Signal von 1kHz, 100mV an den "AUX/CD/VIDEO"-Anschluß anlegen.
3. Vergewissern, daß die Ausgabe der Ausgangsleistung ca. 2 ~ 4 Sekunden nach dem Umschalten des Netzschalters auf "ON" erfolgt.
4. Die Ausgangsleistung sollte sofort ausfallen, wenn der Netzschalter auf "OFF" gestellt wird.

FRANÇAIS

■ CARACTERISTIQUES (Sujet á changement sans préaris.)

(DIN 45 500)

■ SECTION AMPLIFICATEUR

Puissance de sortie continue de 20 Hz~20 kHz,	
les deux canaux en circuit	2 × 50W (4Ω)
	2 × 50W (8Ω)
Puissance de sortie continue à 1 kHz	
les deux canaux en circuit	2 × 50W (4Ω)
	2 × 50W (8Ω)
Distorsion harmonique totale	
à puissance nominale (20 Hz~20 kHz)	0,07% (4Ω)
	0,03% (8Ω)
à puissance nominale (1 kHz)	0,01% (4Ω)
	0,005% (8Ω)
à demi-puissance (20 Hz~20 kHz)	0,03% (4Ω)
	0,02% (8Ω)
à demi-puissance (1 kHz)	0,009% (4Ω)
	0,005% (8Ω)
puissance de −26 dB à 1 kHz	0,01% (4Ω)
puissance de 50 mW à 1 kHz	0,01% (4Ω)
Distorsion d'intermodulation	
à puissance nominale à 60 Hz: 7 kHz=4:1, SMPTE, 8Ω	0,03%
Réponse de fréquences	
les deux canaux en circuit, −3 dB	10 Hz~25 kHz (8Ω)
Bruit et ronflement résiduels	0,8 mV
Coefficient d'amortissement	30 (8Ω)
Sensibilité et impédance d'entrée	
PHONO	2,5 mV/47kΩ
SYNTONISATEUR, AUX/CD/VIDEO (TUNER, AUX/CD/VIDEO)	150 mV/27kΩ
BANDE (TAPE)	150 mV/27kΩ
PHONO (tension d'entrée maximum, 1 kHz RMS)	150 mV
Réponse de fréquence	
PHONO	Courbe nominale RIAA
	±0,8 dB (30 Hz~15 kHz)
SYNTONISATEUR, AUX/CD/VIDEO, BANDE (TUNER, AUX/CD/VIDEO, TAPE)	10 Hz~100 kHz (−3 dB)

Signal/Bruit
- **à puissance nominale (4Ω)**
  - **PHONO** 79 dB (IHF, A: 81 dB)
  - **SYNTONISATEUR, AUX/CD/VIDEO, BANDE (TUNER, AUX/CD/VIDEO, TAPE)** 88 dB (IHF, A: 99 dB)
- **puissance de −26 dB (4Ω)**
  - **PHONO** 62 dB
  - **SYNTONISATEUR, AUX/CD/VIDEO, BANDE (TUNER, AUX,/CD/VIDEO TAPE)** 62 dB
- **puissance de 50 mW (4Ω)**
  - **PHONO** 62 dB
  - **SYNTONISATEUR, AUX/CD/VIDEO, BANDE (TUNER, AUX/CD/VIDEO, TAPE)** 62 dB

Réglage de la tonalité
- **BASSES (BASS)** 50 Hz, +10 dB~ −10 dB
- **AIGUS (TREBLE)** 20 kHz, +0 dB~ −10 dB

Tension de sortie et impédance
- **SORTIE ENREGISTREMENT (REC OUT)** 150 mV

Equilibrage des canaux, AUX 250 Hz~6 300 Hz ±1 dB
Séparation des canaux, AUX 1 kHz 55 dB
Niveau de sortie des casques et impédance 400 mV/330Ω
Impédance de charge 4Ω~16Ω

■ DIVERS

Consommation 400W
Alimentation
- **Pour l'Europe** CA 50 Hz/60 Hz, 220V
- **Autres** CA 50 Hz/60 Hz, 110V/120V/220V/240V

Dimensions (L×H×Pr) 315 × 98,9 × 248 mm
Poids 5,6 kg

Remarque:
On mesure la distorsion harmonique totale au moyen d'un analyseur de spectre digital (Système H.P. 3045).

■ MESURAGES ET RÉGLAGES

- **Ajustement de la marche à vide (ICQ)**

1. Après la réparation de l'amplificateur principal, tourmer le volume sonore au niveau minimal avant de mettre en marche l'alimentation en courant.
2. Tourner complètement les résistances semi-fixes (VR201, VR202) pour un ajustement dans le sens inverse des aiguilles d'une montre de ICQ.
3. Ensuite, tout en élevant lentement la tension d'alimentation à partir de 0V avec le contrôleur de tension d'alimentation en courant, s'assurer que le courant consommé est exempt de toute anormalité. Le courant consommé à 60Hz/50Hz dans un mode à signal nul est montré ci-dessous par rapport à une tension d'alimentation de 110V/120V/220V/240V. (Se référer à la Fig. 15.)

Tension d'alimentation en courant		AC110V	AC120V	AC220V	AC240V
Courant consommé	50Hz	125 ~ 380mA	110 ~ 340mA	65 ~ 190mA	55 ~ 170mA
	60Hz	120 ~ 360mA	105 ~ 320mA	60 ~ 180mA	50 ~ 160mA

4. Brancher un voltmètre à C.C. à TP1 et TP2 (canal de gauche) et à TP3 et TP4 (canal de droite). (Se référer à la Fig. 16.)
5. Régler l'interrupteur d'alimentation sur "on" (mise en circuit) et ajuster VR201 (canal de gauche) ou VR202 (canal de droite), de telle sorte que 5 minutes après la tension à chaque point de mesure soit de 1.2mV.
   Nota: ICQ ne circule pas pendant 2 ~ 4 secondes après le réglage de l'interrupteur d'alimentation sur "on" (mise en circuit), du fait de l'accord silencieux pendant le fonctionnement de la mise en circuit/hors circuit.

- **Réglage du mesureur de puissance de crête**

1. Reccorder une résistance fictive de 8Ω ou un hautparleur d'une impédance de 8Ω à la borne du hautparleur, et tourner l'interrupteur d'alimentation sur "on" (en circuit). (Fig. 17)
2. Appliquer 1kHz monophasé à la borne AUX/CD/VIDEO.
3. Régler le volume sonore au niveau maximum, et ajuster l'entrée de telle sorte que la puissance de sortie à la borne du haut-parleur soit de 2,83V.
4. Ajuster à la fois les canaux de VR601 (canal de gauche) et de VR602 (canal de droite) de telle sorte que la lecture du mesure soit de 1W. (Fig. 18)

- **Vérification du circuit de synthonisation pendant le fonctionnement de marche/arrêt**

1. Brancher une charge de 8Ω à la borne du haut-parleur.
2. Appliquer un signal de 1kHz 100mV à la borne "AUX/CD/VIDEO".
3. S'assurer qu'une puissance de sortie soit délivrée 2 ~ 4 secondes après avoir mis l'interrupteur d'alimentation en marche ("on").
4. La puissance de sortie disparaîtra immédiatement lorsque l'interrupteur d'alimentation est tourné sur "off" (hors circuit).

ESPAÑOL

■ ESPECIFICACIONES (Estas especificaciones están sujetas a cualquier cambio sin previo eviso.)

(DIN 45 500)

■ SECCION AMPLIFICADOR

Potencia continua de 20 Hz~20 kHz
en ambos canales 2 × 50W (4Ω)
2 × 50W (8Ω)

Potencia continua de 1 kHz
en ambos canales 2 × 50W (4Ω)
2 × 50W (8Ω)

Distorsión armónica total
potencia de régimen a 20 Hz~20 kHz 0,07% (4Ω)
0,03% (8Ω)
potencia de régimen a 1 kHz 0,01% (4Ω)
0,005% (8Ω)
mitad de potencia a 20 Hz~20 kHz 0,03% (4Ω)
0,02% (8Ω)
mitad de potencia a 1 kHz 0,009% (4Ω)
0,005% (8Ω)
−26 dB de potencia a 1 kHz 0,01% (4Ω)
50 mW de potencia a 1 kHz 0,01% (4Ω)

Distorsión por intermodulación
potencia de régimen a 60 Hz: 7 kHz=4:1, SMPTE, 8Ω 0,03%

Ancho de banda de potencia
con ambos canales, −3 dB 10 Hz~25 kHz (8Ω)
Zumbido residual y ruido 0,8 mV
Factor de amortiguamiento 30 (8Ω)
Sensibilidad e impedancia de entrada
TOCADISC. (PHONO) 2,5 mV/47kΩ
SINTON., AUX/CD/VIDEO (TUNER, AUX/CD/VIDEO) 150 mV/27kΩ
CINTA (TAPE) 150 mV/27kΩ
Voltaje máximo de entrada de PHONO (1 kHz, RMS) 150 mV

Respuesta de frecuencia
TOCADISC. (PHONO) curva RIAA estándar ±0,8 dB (30 Hz~15 kHz)
SINTON., AUX/CD/VIDEO, GRAB. (TUNER, AUX/CD/VIDEO, TAPE) 10 Hz~100 kHz (−3 dB)

Relación de señal a ruido
potencia de régimen (4Ω)
TOCADISC. (PHONO) 79 dB (IHF, A: 81 dB)
SINTON., AUX/CD/VIDEO, GRAB. (TUNER, AUX/CD/VIDEO, TAPE) 88 dB (IHF, A: 99 dB)
−26 dB de potencia (4Ω)
TOCADISC. (PHONO) 62 dB
SINTON., AUX/CD/VIDEO, GRAB. (TUNER, AUX/CD/VIDEO, TAPE) 62 dB
50 mW de potencia (4Ω)
TOCADISC. (PHONO) 62 dB
SINTON., AUX/CD/VIDEO, GRAB. (TUNER, AUX/CD/VIDEO, TAPE) 62 dB

Controles de tono
BAJOS (BASS) 50 Hz, +10 dB~ −10 dB
AGUDOS (TREBLE) 20 kHz, +10 dB~ −10 dB

Voltaje e impedancia de salida
SAL. GRAB. (REC OUT) 150 mV
Equilibrio de canales, AUX 250 Hz~6 300 Hz ±1 dB
Separación de canales, AUX 1 kHz 55 dB
Impedancia y nivel de salida de los auriculares 400 mV/330Ω
Impedancia de carga 4Ω~16Ω

■ GENERAL

Consumo de energía 400W
Alimentación de energía
- **Para Europa continental** CA 50 Hz/60 Hz, 220V
- **Para otros paises** CA 50 Hz/60 Hz, 110V/120V/220V/240V

Dimensiones (An.×Al.×Prof.) 315 × 98,9 × 248 mm
Peso 5,6 kg

Nota:
La distorsión armónica total se mide con el analizador de espectro digital (sistema H.P. 3045).

■ MEDICIONES Y AJUSTE

- **Ajuste de marcha en vacío (ICQ)**

1. Después de reparar el amplificador principal, gire el volumen de sonido al nivel mínimo antes de conectar la alimentación de corriente.
2. Gire completamente los resistores semifijos (VR201, VR202) para ajuste ICQ a la izquierda.
3. A continuación, eleve lentamente el voltaje de suministro desde 0V mediante el control de voltaje de suministro de energía. Asegúrese de que la corriente consumida esté libre de anormalidad. La corriente consumida a 60Hz/50Hz en modalidad sin señal se muestra abajo con respecto a voltaje de suministro 110V/120V/220V/240V. (Refiérase a la Fig. 15).

Voltaje de suministro de energía		AC110V	AC120V	AC220V	AC240V
Corriente consumida	50Hz	125 ~ 380mA	110 ~ 340mA	65 ~ 190mA	55 ~ 170mA
	60Hz	120 ~ 360mA	105 ~ 320mA	60 ~ 180mA	50 ~ 160mA

4. Conecte un voltímetro de CC a TP1 y TP2 (canal izquierdo) o TP3 y TP4 (canal derecho) (Refiera a la Fig. 16).
5. Ponga el interruptor de alimentación en "on" (conectado) y ajuste VR201 (canal izquierdo) o VR202 (canal derecho) de manera que 5 minutos después el voltaje en cada punto de prueba sea 1.2mV.
   Nota: ICQ no fluye por 2 ~ 4 seg. después de poner el interruptor de alimentación en "on" debido a silenciamiento durante la operación de conectadodesconectado de alimentación.

- **Ajuste de medidor de potencia cresta**

1. Conectar un resistor simulado de impedancia de 8Ω al terminal de altavoz y conectar el interruptor de alimentación. (Fig. 17).
2. Aplicar monoonda de 1kHz al terminal AUX/CD/VIDEO.
3. Poner el volumen de sonido en el nivel máximo y ajustar la entrada de manera que la salida al terminal de altavoz sea 2,83V.
4. Ajustar ambos canales de VR601 (Canal I) y VR602 (Canal D) de manera que la lectura del medidor sea 1W. (Fig. 18)

- **Comprobación de circuito silenciador durante operación de conexión-desconexión de energía**

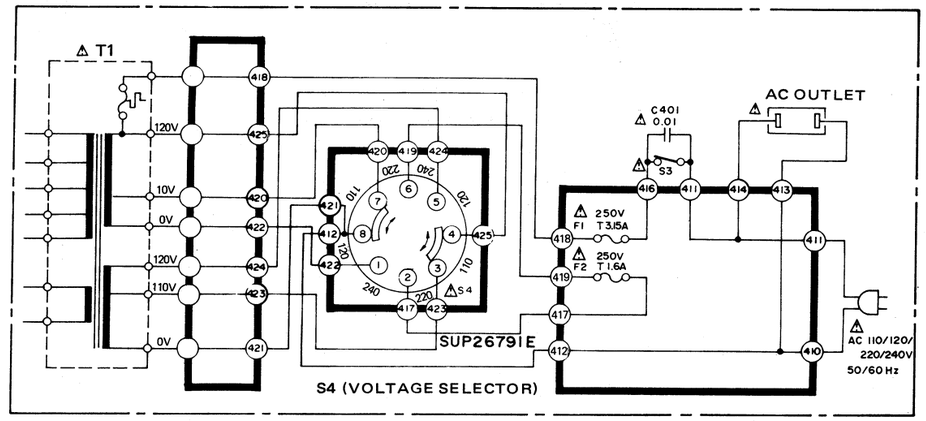
1. Conectar carga de 8Ω al terminal de altavoz.
2. Aplicar señal de 1kHz 100mV al terminal de "AUX/CD/VIDEO".
3. Asegurarse de que se desarrolla salida unos 2 ~ 4 seg. después de conectar el interruptor de alimentación.
4. La salida debe desaparecer inmediatamente cuando se desconecta el interruptor.

■ CIRCUITS TO BE CHANGED AND THE AREAS

- **Power source circuit**

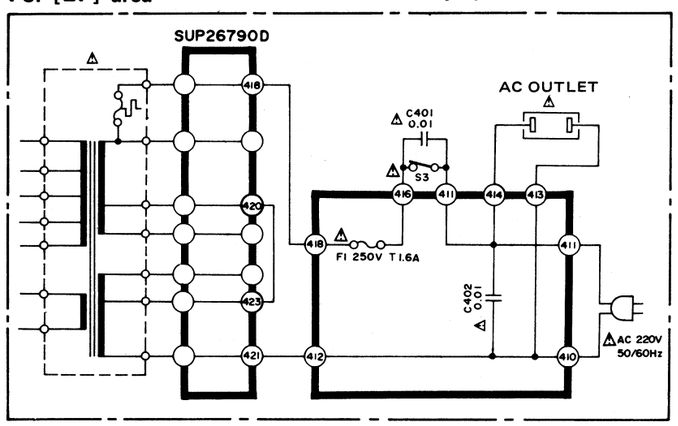
For [XA] area

[XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.



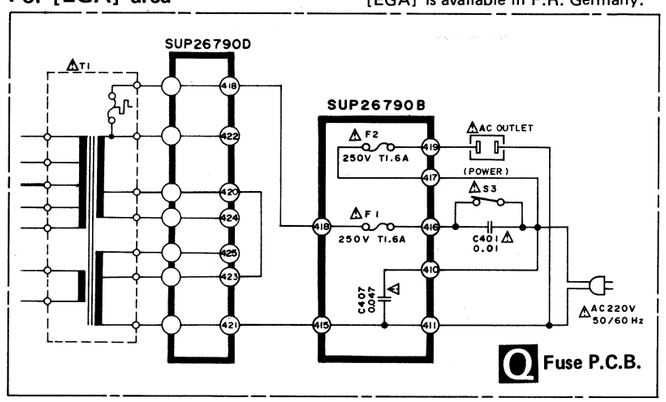
For [EF] area

[EF] is available in France.



For [EGA] area

[EGA] is available in F.R. Germany.



For [XL] area

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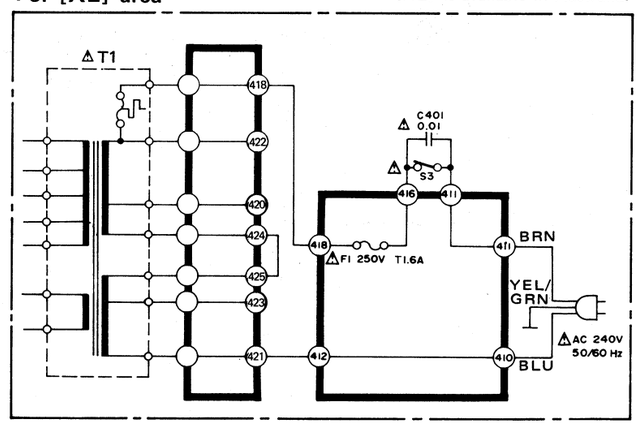
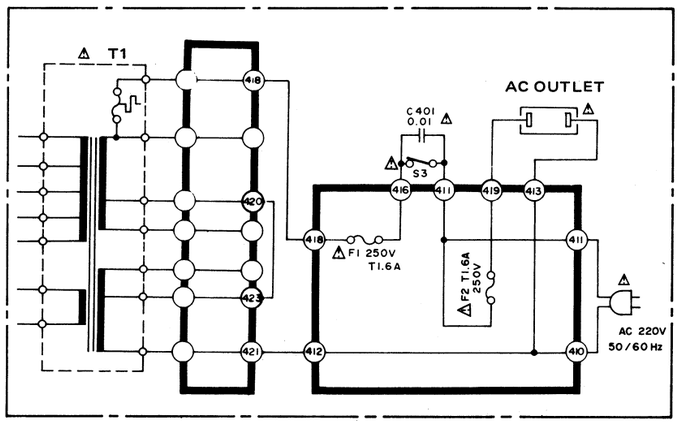


For [EW] area

[EW] is available in Switzerland



- **Speaker terminal circuit**

For [EGA] area

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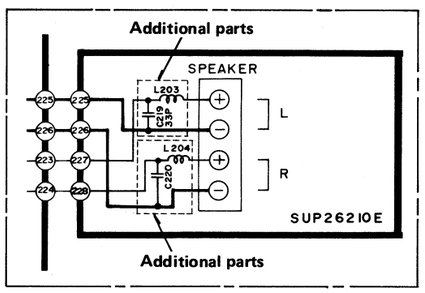

- **Input terminal circuit**

For [EGA] area

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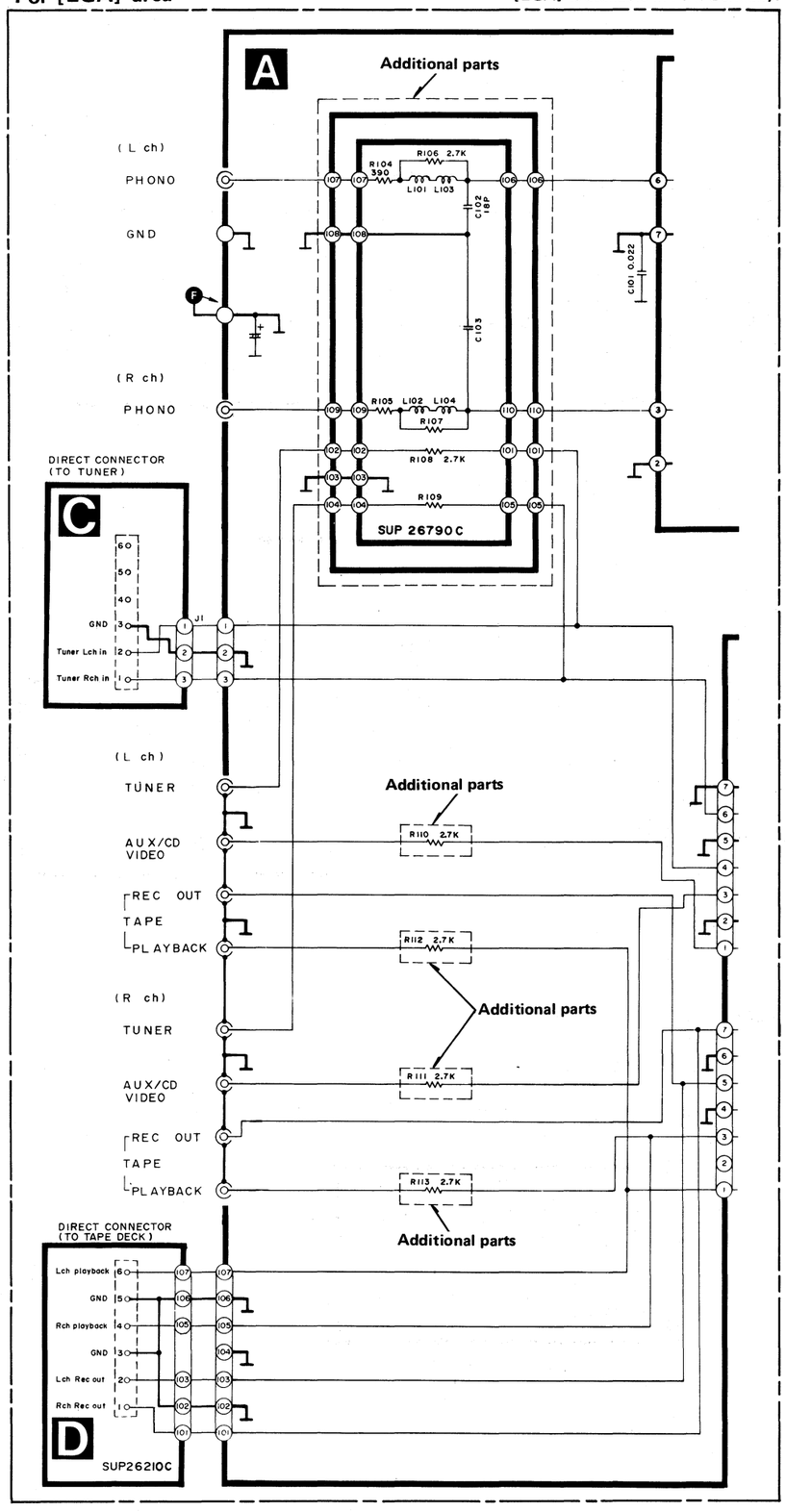
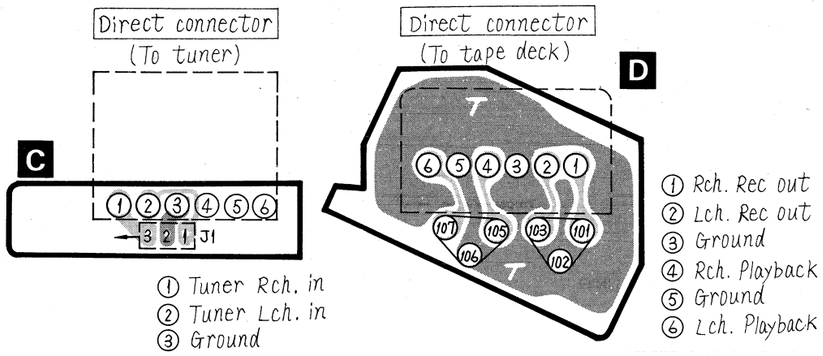
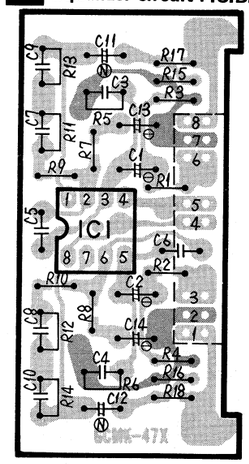


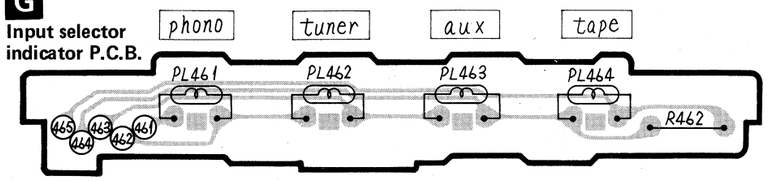
Printed in Japan
830106600 ⊗YK/IM



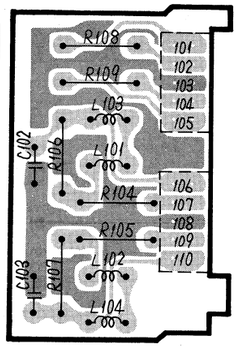
B Equalizer circuit P.C.B.



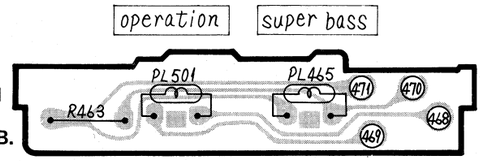
G Input selector indicator P.C.B.



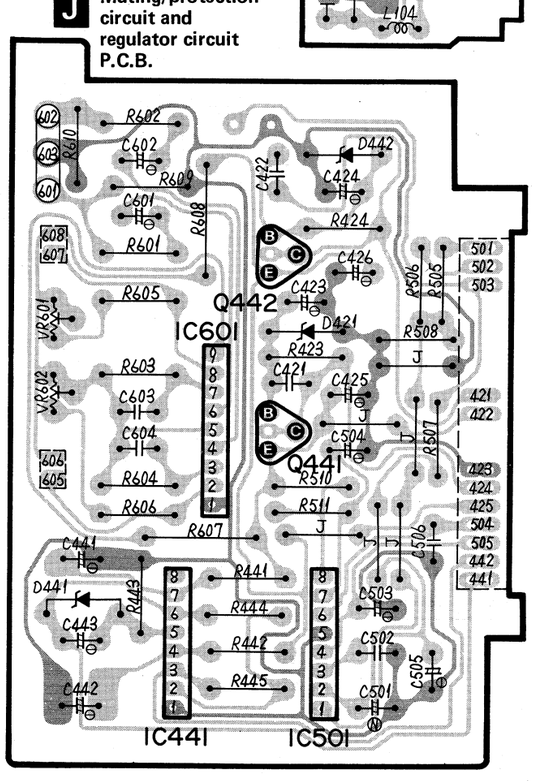
R [EGA] only



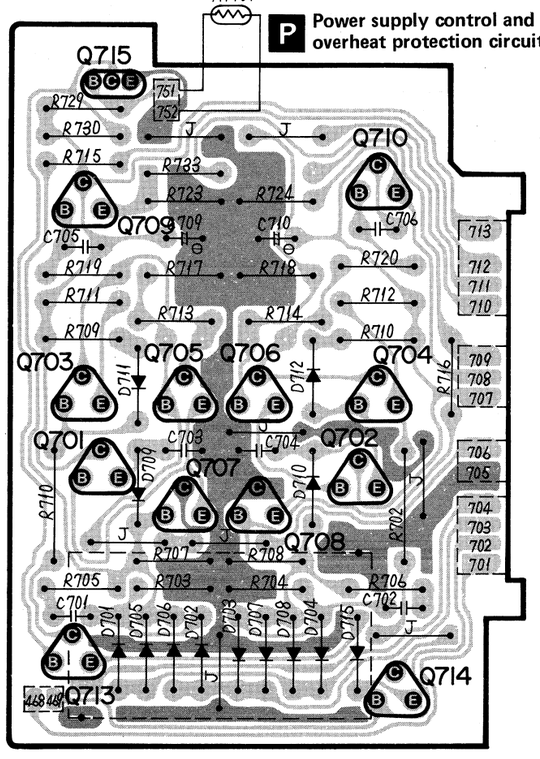
H Operation and super bass indicator P.C.B.



J Muting/protection circuit and regulator circuit P.C.B.



P Power supply control and overheat protection circuit



■ OPERATION OF HIGH EFFICIENCY MAIN AMPLIFIER

- In this unit, in order to minimize the temperature rise of the main amplifier, a low voltage power supply circuit and variable power supply circuit in which the DC output voltage changes according to the output level are added to the class B amplifier operated by conventional plus and minus power supply, realizing a power amplifier that hardly rises in temperature.
  In the conventional class B amplifier, a high voltage is always applied to the power transistor to obtain a high level output, and the efficiency is about 78% when the output is maximum. However, when the output level is low, the efficiency decreases to 20 ~ 30%, so much resulting in temperature rise of the power transistor.
  To minimize the temperature rise of power transistor in this unit, a low voltage is applied to the power transistor when the output level is low, and the voltage is increased to obtain a high level output so that the efficiency of the circuit is high even when the output level is low.

- **Operation of actual circuit**

Q203~Q206 are power transistors in the output stage of main amplifier, while D405, C404 and C405 make up the low voltage power supply circuit; D401~404, C402 and 403, the high voltage power supply circuit; and Q701~712, D701 ~ D712, the variable power supply circuit.

1) When the output voltage of main amplifier is low.

In case the output voltage of main amplifier is low, a low voltage is applied to the power transistors Q203~206 of main amplifier from the low voltage power source through switching diodes D713 and D714.

2) When the output voltage of main amplifier is high.

In case the output voltage of main amplifier is high, a voltage higher than the output level is applied to the power transistors Q203~206 of main amplifier from the high voltage power supply circuit through power transistors Q711 and 712 of variable power supply circuit. In this case, switching diodes D713 and D714 turn OFF with inverse voltage applied. The waveform is shown in Photo. 1 (f = 1 kHz)

The circuit operation is as follows:

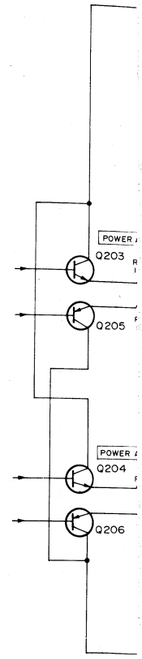
The output of main amplifier is rectified by diodes D705~708; the half-rectified waveform is received by buffer transistors Q707 and Q708; the output is amplified (about 1.5 times) by DC amplifier transistors Q705 and Q706; then the output waveform power-amplified by driver transistors Q709, 710 and power transistors Q711, 712 is compared with switching diodes D713, 714; and the output of higher potential is applied to the power transistor collectors of main amplifier. In this case, Q703, 704 are the constant current load of Q705, 706.

3) Thermal protection circuit

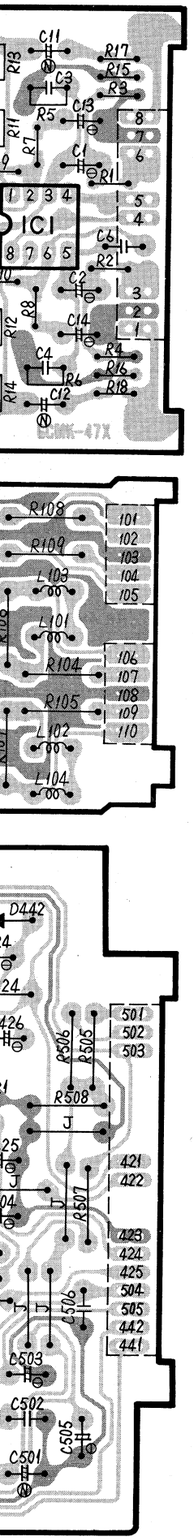
Transistors Q713~715 are switching tansistors, and thermistor PS 1 is a thermal protection circuit. When the temperature of PS 1 becomes higher than 130°C (266°F), the resistance increases, causing Q715 to turn ON, Q713, 714 OFF, constant current load Q705, Q706 OFF, then Q709, 710, 711, 712 turn OFF, and only a low voltage is applied to the power transistors of main amplifier through switching diodes D713, 714 so that the power transistors of main amplifier are thermally protected.

4) When the signal frequency is higher (than 1 kHz).

The circuit operation when the signal frequency is lower (than 1kHz) has been previously explained. In case the frequency is higher than 1 kHz, it is properly controlled so that the power supply is not switched frequently in accordance with the signal waveform. That is, the output signal of amplifier is rectified by diodes D701~704, and the half-rectified waveform is differentiated (by C701, 702) and is applied to buffer transistors Q707, 708. Furthermore, the sum of the differentiated waveform and the original half-rectified waveform is peak-detected by transistors Q701, 702 and C703, C704 and is added to buffer transistors Q707, 708 through diodes D709, 710. The output, after DC and power-amplified, is applied to the power transistors collectors of main amplifier.
Photo 1~4 at the right show the waveform of voltage at the POINT Ⓐ on Fig. 19 and the signal frequency.
This is intended to improve the performance such as distortion factor at high frequencies. In other words, the efficiency is increased at low frequencies when the performance does not worsen, while at high frequencies, the collector voltage of power transistors is changed into DC voltage the same as in conventional class B amplifier.



Equalizer circuit P.C.B.



■ OPERATION OF HIGH EFFICIENCY MAIN AMPLIFIER

- In this unit, in order to minimize the temperature rise of the main amplifier, a low voltage power supply circuit and variable power supply circuit in which the DC output voltage changes according to the output level are added to the class B amplifier operated by conventional plus and minus power supply, realizing a power amplifier that hardly rises in temperature.
  In the conventional class B amplifier, a high voltage is always applied to the power transistor to obtain a high level output, and the efficiency is about 78% when the output is maximum. However, when the output level is low, the efficiency decreases to 20～30%, so much resulting in temperature rise of the power transistor.
  To minimize the temperature rise of power transistor in this unit, a low voltage is applied to the power transistor when the output level is low, and the voltage is increased to obtain a high level output so that the efficiency of the circuit is high even when the output level is low.

- **Operation of actual circuit**
  Q203～Q206 are power transistors in the output stage of main amplifier, while D405, C404 and C405 make up the low voltage power supply circuit; D401～404, C402 and 403, the high voltage power supply circuit; and Q701～712, D701 ～ D712, the variable power supply circuit.

1) When the output voltage of main amplifier is low.

In case the output voltage of main amplifier is low, a low voltage is applied to the power transistors Q203～206 of main amplifier from the low voltage power source through switching diodes D713 and D714.

2) When the output voltage of main amplifier is high.

In case the output voltage of main amplifier is high, a voltage higher than the output level is applied to the power transistors Q203～206 of main amplifier from the high voltage power supply circuit through power transistors Q711 and 712 of variable power supply circuit. In this case, switching diodes D713 and D714 turn OFF with inverse voltage applied. The waveform is shown in Photo. 1 (f = 1 kHz)

The circuit operation is as follows:

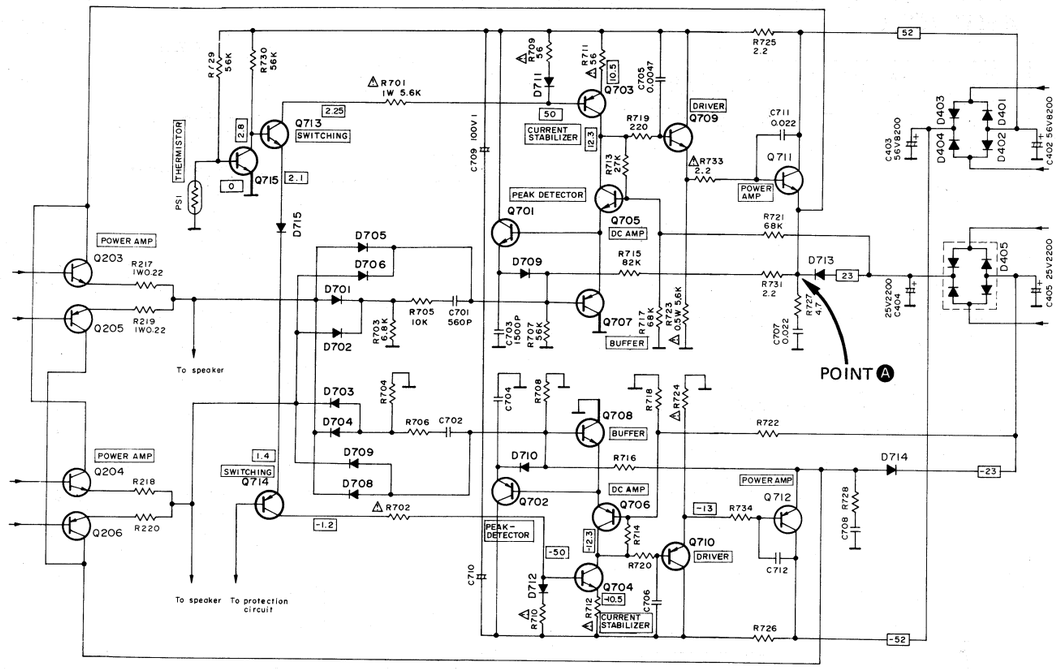
The output of main amplifier is rectified by diodes D705～708; the half-rectified waveform is received by buffer transistors Q707 and Q708; the output is amplified (about 1.5 times) by DC amplifier transistors Q705 and Q706; then the output waveform power-amplified by driver transistors Q709, 710 and power transistors Q711, 712 is compared with switching diodes D713, 714; and the output of higher potential is applied to the power transistor collectors of main amplifier. In this case, Q703, 704 are the constant current load of Q705, 706.

3) Thermal protection circuit

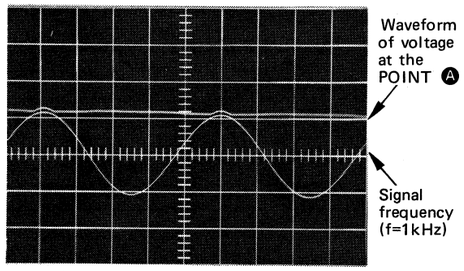
Transistors Q713～715 are switching tansistors, and thermistor PS 1 is a thermal protection circuit. When the temperature of PS 1 becomes higher than 130°C (266°F), the resistance increases, causing Q715 to turn ON, Q713, 714 OFF, constant current load Q705, Q706 OFF, then Q709, 710, 711, 712 turn OFF, and only a low voltage is applied to the power transistors of main amplifier through switching diodes D713, 714 so that the power transistors of main amplifier are thermally protected.

4) When the signal frequency is higher (than 1 kHz).

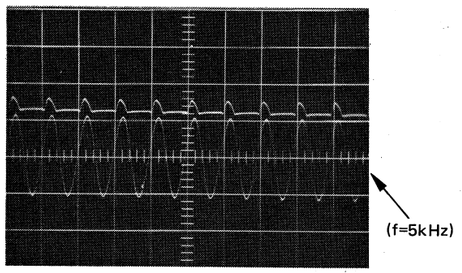
The circuit operation when the signal frequency is lower (than 1kHz) has been previously explained. In case the frequency is higher than 1 kHz, it is properly controlled so that the power supply is not switched frequently in accordance with the signal waveform. That is, the output signal of amplifier is rectified by diodes D701～704, and the half-rectified waveform is differentiated (by C701, 702) and is applied to buffer transistors Q707, 708. Furthermore, the sum of the differentiated waveform and the original half-rectified waveform is peak-detected by transistors Q701, 702 and C703, C704 and is added to buffer transistors Q707, 708 through diodes D709, 710. The output, after DC and power-amplified, is applied to the power transistors collectors of main amplifier.
Photo 1～4 at the right show the waveform of voltage at the POINT Ⓐ on Fig. 19 and the signal frequency.
This is intended to improve the performance such as distortion factor at high frequencies. In other words, the efficiency is increased at low frequencies when the performance does not worsen, while at high frequencies, the collector voltage of power transistors is changed into DC voltage the same as in conventional class B amplifier.



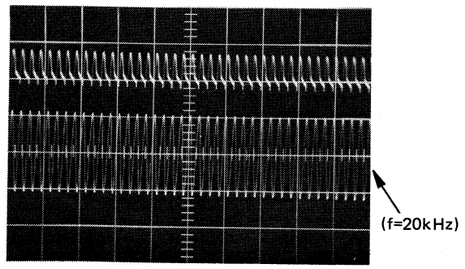
[Fig. 19]
High Efficiency Main Amplifier



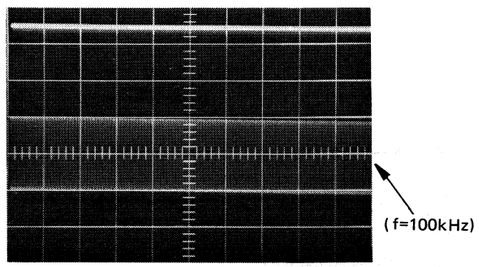
[Photo 1]
f=1kHz



[Photo 2]
f=5kHz

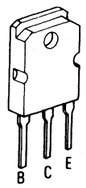
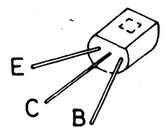


[Photo 3]
f=20kHz



[Photo 4]
f=100kHz

■ TERMINAL GUIDE OF TRANSISTORS, DIODES AND IC'S

2SC3181, 2SA1265 2SA1264, 2SC3182	2SC1384, 2SA684 2SC1328, 2SA992 2SC1815, 2SA1015 2SC1845
	
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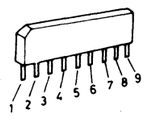
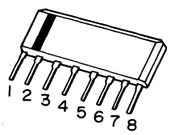
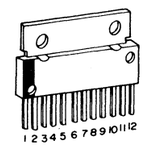
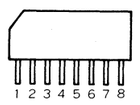
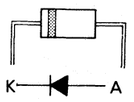
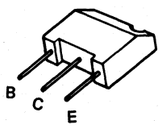
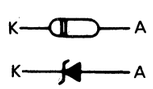
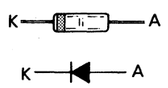
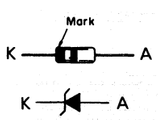
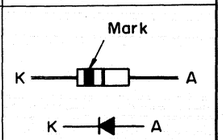
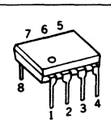
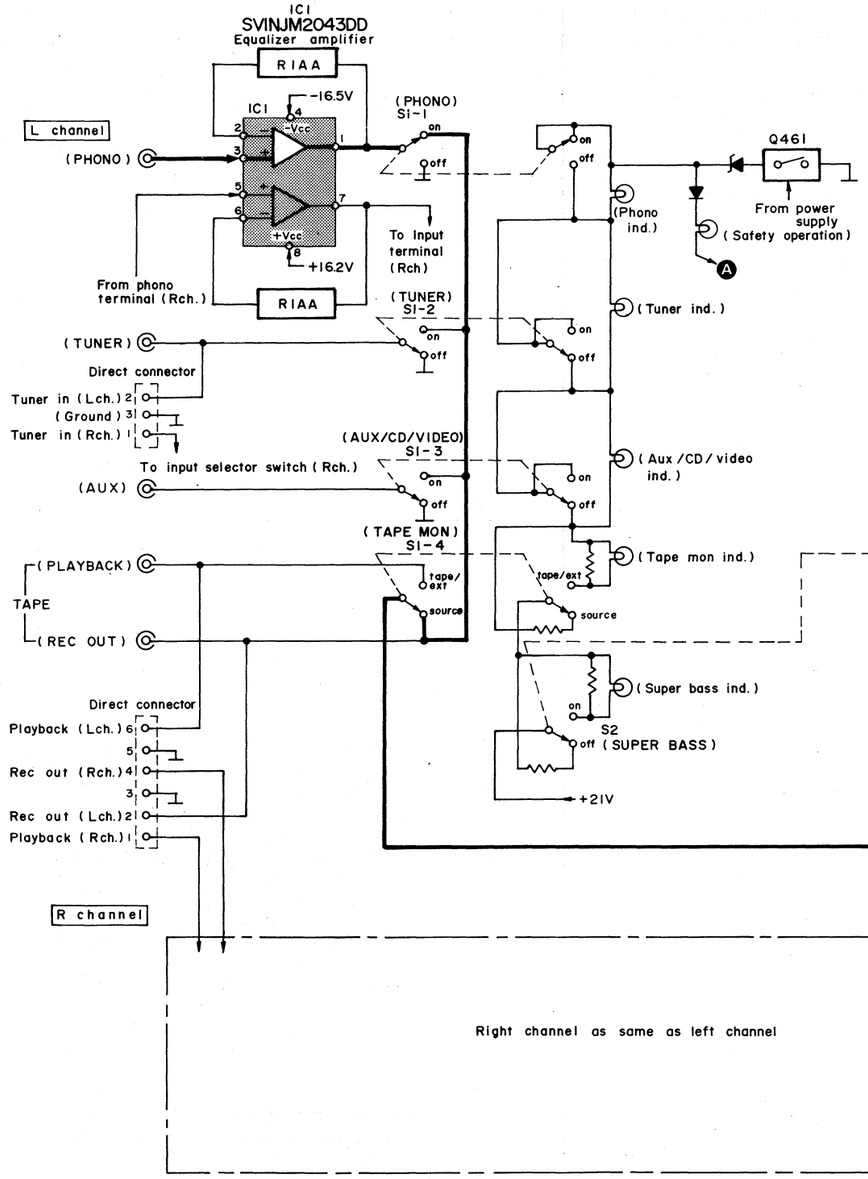
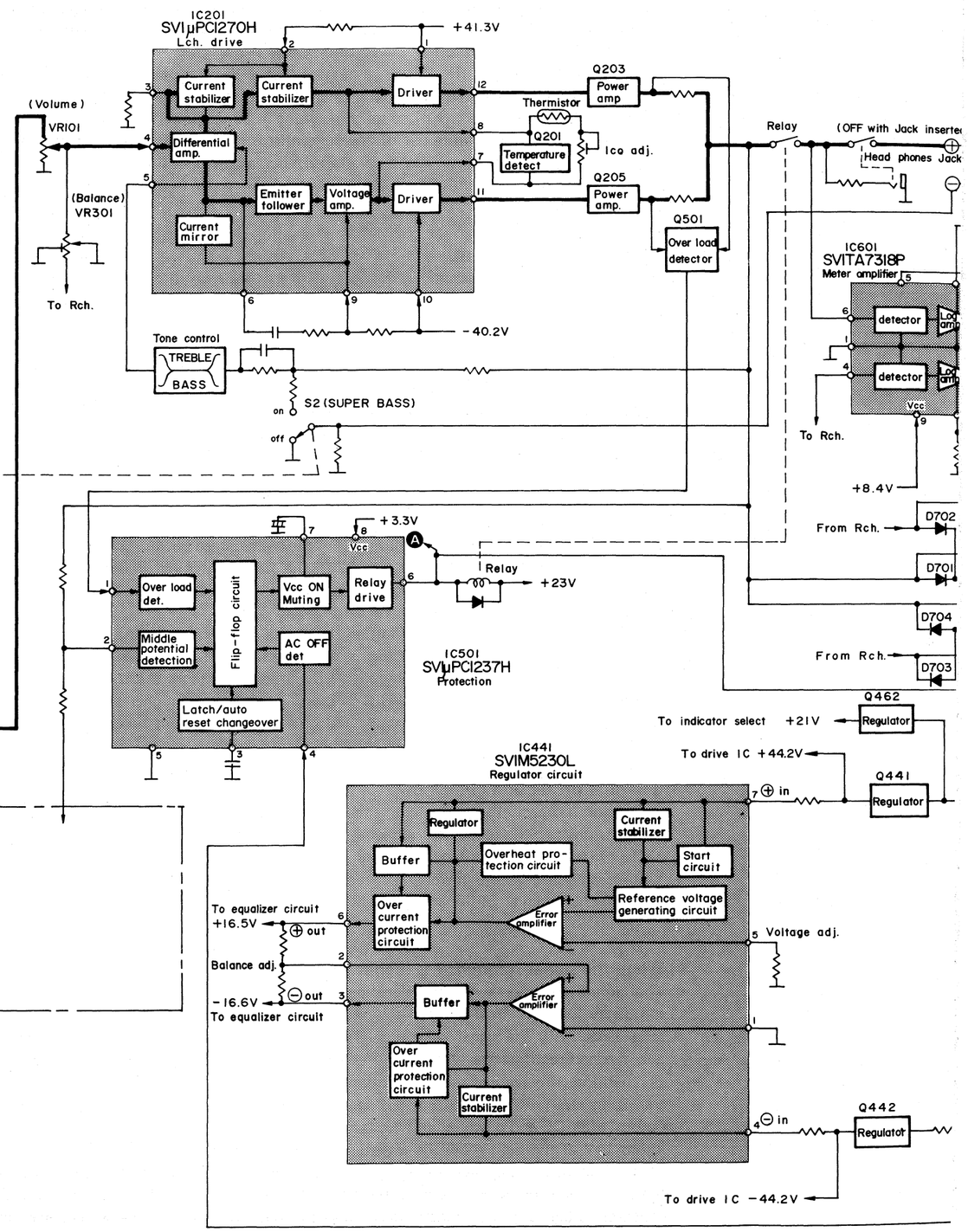
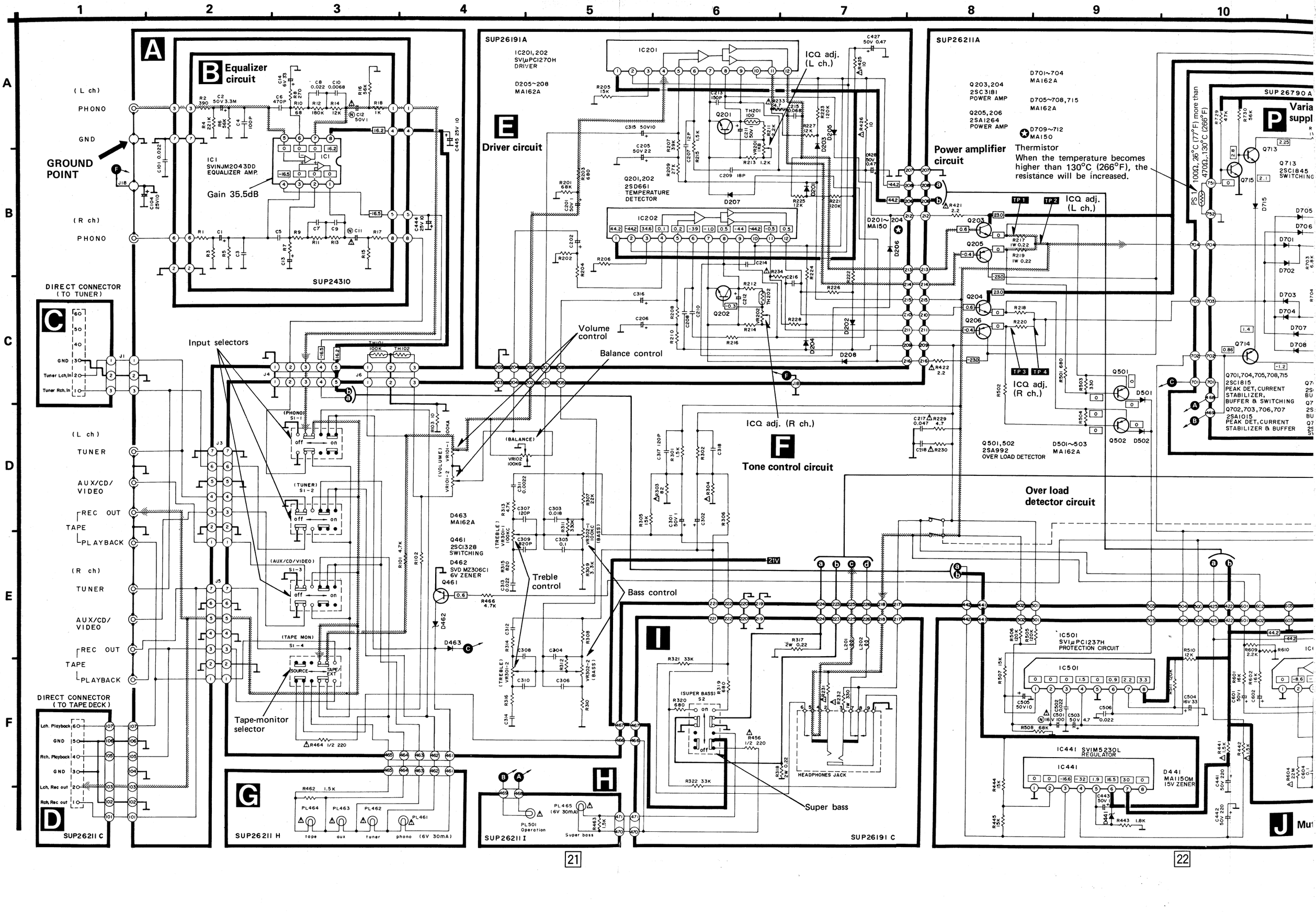
	
SVIμPC1270H	SVIμPC1237H
	
SVDS3V20, SVDS4V20	2SD661
	
SVDMZ□□□□	MA150
	
MA1150M	MA162 SVDS3S3M
	
SVINJM2043DD	
	

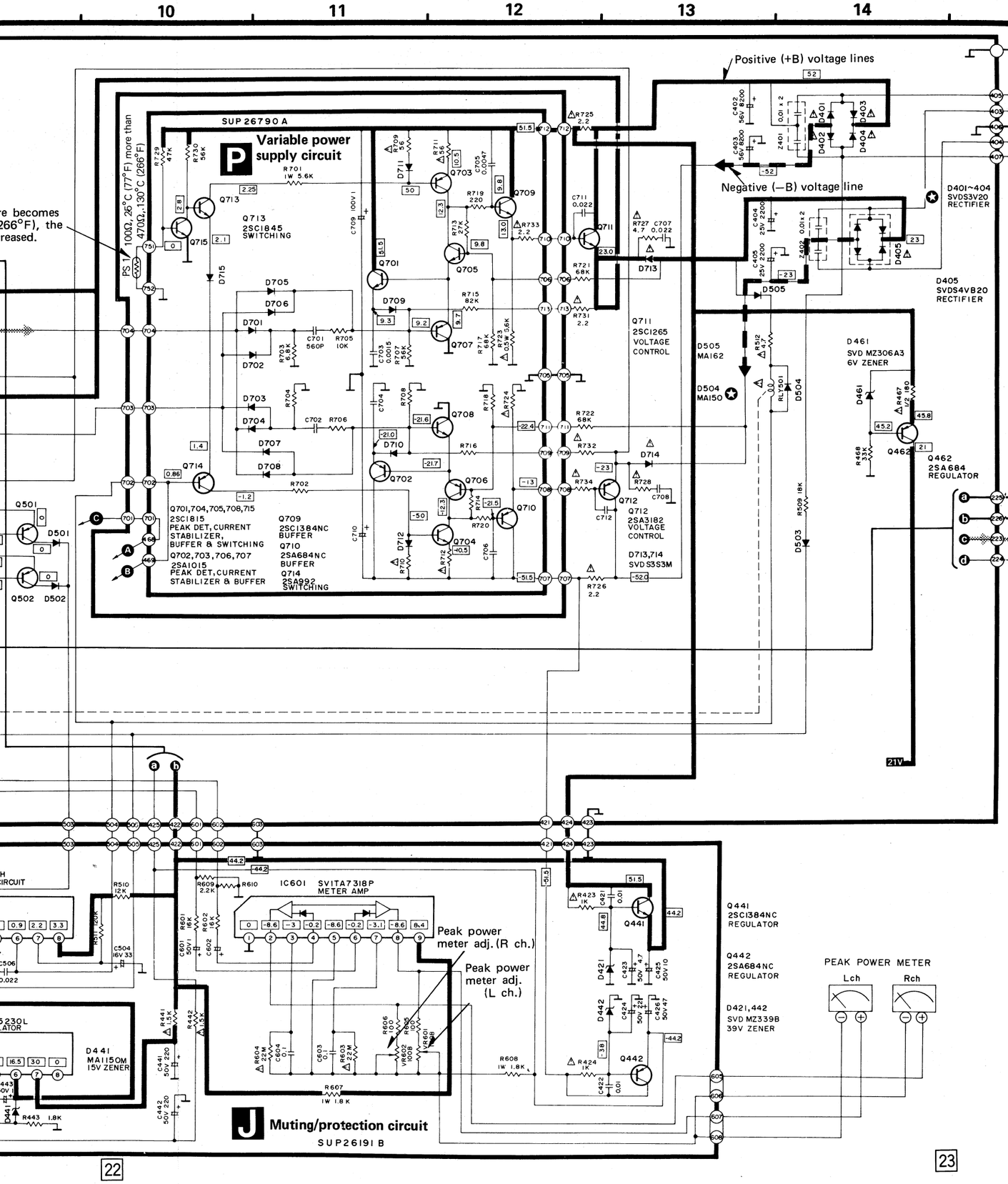
■ BLOCK DIAGRAM





(PHONO)
(TUNER)
(VIDEO)
(MON)
Input terminal (ch)
on
off
tape/ext
source
(Phono ind.)
(Tuner ind.)
(Aux /CD/ video ind.)
(Tape mon ind.)
(Super bass ind.)
S2
off (SUPER BASS)
+21V
Q461
From power supply
(Safety operation)
A
(Volume)
VR101
(Balance)
VR301
To Rch.
IC201
SVIμPC1270H
Lch. drive
+41.3V
Current stabilizer
Current stabilizer
Driver
Differential amp.
Current mirror
Emitter follower
Voltage amp.
Driver
Thermistor
Q201
Temperature detect
Icq adj.
Q203
Power amp
Q205
Power amp.
Q501
Over load detector
-40.2V
Tone control
TREBLE
BASS
S2 (SUPER BASS)
Relay
(OFF with Jack inserted)
Head phones Jack
Speaker terminal (Lch.)
Peak power meter (Lch.)
Peak power meter (Rch.)
IC601
SVITA7318P
Meter amplifier
detector
Log amp
detector
Log amp
Vcc
VR601
(Peak power meter adj.)
VR602
(Peak power meter adj.)
To Rch.
+8.4V
D706
From Rch.
D702
D705
D701
C701
D708
D704
C702
D707
From Rch.
D703
TH701
C703
D709
Q715
Switching
Q713
Switching
+51.5V
Q703
Current stabilizer
Q701
Peak det.
Q707
Buffer
Q709
Buffer
Q711
Variable power supply circuit
DC amp.
Q705
Q708
Buffer
Q706
DC amp.
C704
D710
Q702
Peak det.
Q710
Buffer
Q712
Variable power supply circuit
Q714
Switching
Q704
Current Stabilizer
-51.5V
To power amp.
To power amp.
C
D
(High voltage power source)
Rectifier
(+52V)
(-52V)
D713
(+23V)
Rectifier
(-23V)
(Low voltage power source)
D714
Power transformer
AC Line
Meter ind.
+3.3V
Vcc
Over load det.
Vcc ON Muting
Relay drive
Relay
+23V
Middle potential detection
Flip-flop circuit
AC OFF det
Latch/auto reset changeover
IC501
SVμPC1237H
Protection
IC441
SVIM5230L
Regulator circuit
Regulator
Buffer
Overheat protection circuit
Current stabilizer
Start circuit
Reference voltage generating circuit
Over current protection circuit
Error amplifier
Buffer
Error amplifier
Over current protection circuit
Current stabilizer
To equalizer circuit
+16.5V
out
Balance adj.
-16.6V
out
To equalizer circuit
Voltage adj.
Q462
Regulator
To indicator select +21V
To drive IC +44.2V
Q441
Regulator
in
B
Q442
Regulator
in
C
To drive IC -44.2V
D
Right channel as same as left channel


A
B Equalizer circuit
(L ch)
PHONO
GND
GROUND POINT
J18
(R ch)
PHONO
IC1
SVINJM2043DD
EQUALIZER AMP.
Gain 35.5dB
SUP24310
DIRECT CONNECTOR
(TO TUNER)
C
GND
Tuner Lch.In
Tuner Rch.In
J1
Input selectors
J4
J6
THI01
100K
THI02
(PHONO)
SI-1
off
on
(TUNER)
SI-2
(AUX/CD/VIDEO)
SI-3
(TAPE MON)
SI-4
SOURCE
TAPE/EXT
(VOLUME)
VRI01-1
VRI01-2
100KA
VRI03 10
VRI02
100KG
(BALANCE)
(L ch)
TUNER
AUX/CD/
VIDEO
REC OUT
TAPE
PLAYBACK
(R ch)
TUNER
AUX/CD/
VIDEO
REC OUT
TAPE
PLAYBACK
J3
J5
DIRECT CONNECTOR
(TO TAPE DECK)
Lch. Playback
GND
Rch. Playback
GND
Lch. Rec out
Rch. Rec out
D
SUP26211C
Tape-monitor selector
R464 1/2 220
G
SUP26211H
R462 1.5K
PL464
PL463
PL462
PL461
tape
aux
tuner
phono
(6V 30mA)
H
PL465
(6V 30mA)
PL501
Operation
R463 1.5K
Super bass
SUP26211I
D463
MA162A
Q461
2SC1328
SWITCHING
D462
SVD MZ306C1
6V ZENER
R466 4.7K
Treble control
Bass control
Volume control
Balance control
21V
I
R321 33K
R317 2W 0.22
(SUPER BASS) S2
R320 680
R319 680
R322 33K
R318 2W 0.22
R456 1/2 220
HEADPHONES JACK
Super bass
SUP26191C
SUP26191A
IC201, 202
SVIμPC1270H
DRIVER
D205~208
MA162A
E
Driver circuit
IC201
IC202
Q201
Q201, 202
2SD661
TEMPERATURE
DETECTOR
D207
ICQ adj.
(L ch.)
ICQ adj. (R ch.)
F
Tone control circuit
SUP26211A
Q203, 204
2SC3181
POWER AMP
Q205, 206
2SA1264
POWER AMP
D701~704
MA162A
D705~708, 715
MA162A
D709~712
MA150
Thermistor
When the temperature becomes higher than 130°C (266°F), the resistance will be increased.
Power amplifier circuit
D201~204
MA150
D206
TP1
TP2
TP3
TP4
ICQ adj.
(L ch.)
ICQ adj.
(R ch.)
Q501, 502
2SA992
OVER LOAD DETECTOR
D501~503
MA162A
Over load detector circuit
SUP26790A
P
Varia
suppl
PS1 100Ω, 26°C (77°F) more than
470Ω, 130°C (266°F)
Q713
2SC1845
SWITCHING
Q715
D715
Q701, 704, 705, 708, 715
2SC1815
PEAK DET, CURRENT
STABILIZER,
BUFFER & SWITCHING
Q702, 703, 706, 707
2SA1015
PEAK DET, CURRENT
STABILIZER & BUFFER
Q714
IC501
SVIμPC1237H
PROTECTION CIRCUIT
IC441 SVIM5230L
REGULATOR
IC441
D441
MA1150M
15V ZENER
J
Mu



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■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

- **The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. with ✪ mark, the production part No. are different from the replacement part No. Therefore, when placing an order for replacement parts, please use the part No. in the replacement parts list.**

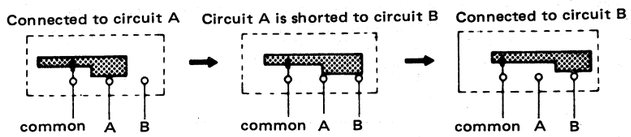
- This is the basic circuit diagram (For continental Europe) of this unit. Note that part of the circuit is subject to change depending on the areas.
- Regarding the circuits to be changed in the basic circuit diagram (For continental Europe) and related areas [EGA], [EF], [EW], [XA], [XL] and [PC] refer to the separate service manual (Order No. SD83012369C9−A).

Notes:

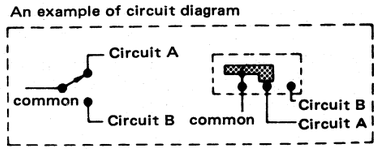
1. **S1−1 ~ S1−3** : Input selector switch in "phono" position. (**S1−1** : phono **S1−2** : tuner **S1−3** : aux, CD, video)
2. **S1−4** : Tape monitor switch in "source" position. source ⟷ tape/ext.
3. **S2** : Super bass switch in "off" position.
4. **S3** : Power source switch in "on" position.
5. **S4 [XA and PC] areas** : Voltage selector switch in "**110V**" position. 120V ⟷ 110V ⟷ 220V ⟷ 240V
6. The headphone jack switch is being short-circuited. (With the headphone plug not inserted)
7. Important safety notice: Components identified by △ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
8. ▭ indicated voltage values are the standard values for the DC electronic circuit tester (high impedance) with the ground point taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester. (high tap)
9. ▒▒▒ Phono signal lines
10. ▬▬ Positive (+B) voltage lines
11. ▬▬▶ Negative (−B) voltage lines

- **Shorting Switch**

This unit uses a horting switch. As illustated below, the circuit is shorted to the next circuit without being opened.
In the circuit diagram, the shaded area represents the common terminal.



An example of circuit diagram



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■ RESISTORS & CAPACITORS

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. The "**S**" mark is service standard parts and may differ from production parts.
4. The unit of resistance is Ω (ohm). K = 1000Ω, M = 1000kΩ.
5. The unit of capacitance is μF (microfarad). P = 10^{-6} μF.
6. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Areas

* [EX] is available in Scandinavia.
* [EGA] is available in F.R. Germany.
* [EF] is available in France.
* [EB] is available in Belgium.
* [EH] is available in Holland.
* [EW] is available in Switzerland.
* [Ei] is available in Italy.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [XL] is available in Australia.
* [PC] is available in European Audio Club.

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value
ERG	2	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value

Resistor Type	Wattage	Tolerance
ERD : Carbon	10 : 1/8W	J : ± 5%
ERG : Metal Oxide	14 : 1/4W	K : ± 10%
ERX : Metal Film	25 : 1/4W	
ERC : Solid	1 : 1W	
	2 : 2W	
	S1 : 1/2W	

ERD10TLJ □□□ → Chip type carbon
ERO10MKG □□□ → Chip type metal film

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Volgage	Value	Tolerance	Peculiarity
ECEA	50	M	R47	R
Type	Voltage	Peculiarity	Value	Special use

Capacitor Type	Voltage: ECEA Type	Voltage: Other	Tolerance
ECEA : Electrolytic	OJ : 6.3V	1H : 50V	C : ± 0.25pF
ECCD : Ceramic	1A : 10V	1C : 16V	J : ± 5%
ECKD : Ceramic	1C : 16V	KC : 400V AC	K : ± 10%
ECQM : Polyester	1E : 25V	1 : 100V	Z : +80%, –20%
ECET : Electrolytic	1H : 50V	2A : 250VAC	N : ± 30%
ECEA..... N: Non Polar Electrolytic	1V : 35V		P : +100%, –0%
ECBT : Axial Leaded Type Ceramic	50 : 50V		
	25 : 25V		
ECQE : Polyester			

Ref. No.	Part No.	Value
RESISTORS		
R1, 2	ERD10TLJ391U	390
R3, 4	ERO10MKG2213	221K
R5, 6	ERO10MKG5622	56.2K
R7, 8	ERD10TLJ271U	270
R9, 10	ERD10TLJ680U	68
R11, 12	ERD10TLJ184U	180K
R13, 14	ERD10TLJ123U	12K
R15, 16	ERD10TLJ563U	56K
R17, 18	ERD10TLJ102U	1K
R101, 102 S [EGA] only	ERD25FJ152	1.5K
R101, 102 S Except for [EGA]	ERD25FJ472	4.7K
R103 S	ERD25FJ100	10
R104, 105 S [EGA] only	ERD25FJ391	390
R106, 107 S [EGA] only	ERD25FJ272	2.7K
R108, 109 S [EGA] only	ERD25FJ272	2.7K
R110, 111 S [EGA] only	ERD25FJ272	2.7K
R112, 113 S [EGA] only	ERD25FJ272	2.7K
R114, 115 S [EGA] only	ERD25FJ332	3.3K
R201, 202 S	ERD25TJ683	68K
R203, 204 S	ERD25FJ681	680
R205, 206 S	ERD25TJ153	15K
R207, 208 S	ERD25TJ393	39K
R209, 210 S	ERD25TJ273	27K
R211, 212 S	ERD25FJ222	2.2K
R213, 214 S	ERD25FJ122	1.2K
R215, 216 S	ERD25FJ152	1.5K
R217, 218 S	ERX1ANJR22	0.22
R219, 220 S	ERX1ANJR22	0.22
R221, 222 S	ERD25TJ124	120K
R223, 224 S	ERD25TJ124	120K
R225, 226 S	ERD25TJ123	12K
R227, 228 S	ERD25TJ123	12K

Ref. No.	Part No.	Value
R229, 230⚠	ERD2FCJ4R7	4.7
R231, 232 S	ERG1ANJ331	330
R233, 234⚠S	ERD25FJ4R7	4.7
R301, 302 S	ERD25FJ152	1.5K
R303, 304⚠S	ERD25FJ820	82
R305, 306 S	ERD25TJ153	15K
R307, 308 S	ERD25TJ223	22K
R309, 310 S	ERD25FJ332	3.3K
R311, 312 S	ERD25TJ 334	330K
R313, 314 S	ERD25FJ472	4.7K
R315, 316 S	ERD25FJ821	820
R317, 318 S	ERX2ANJR22	0.22
R319, 320 S	ERD25FJ681	680
R321, 322 S	ERD25TJ333	33K
R421, 422⚠S	ERD25FJ2R2	2.2
R423, 424⚠S	ERD25FJ102	1K
R425, 426⚠S	ERD25FJ100	10
R441, 442⚠S	ERD25FJ152	1.5K
R443 S	ERD25FJ182	1.8K
R444, 445 S	ERD25TJ153	15K
R456 ⚠	ERDS1FJ221	220
R462, 463 S	ERD25FJ152	1.5K
R464 ⚠	ERDS1FJ221	220
R466 S	ERD25FJ472	4.7K
R467 ⚠	ERDS1FJ181	180
R468 S	ERD25TJ333	33K
R501, 502 S	ERD25FJ681	680
R503, 504 S	ERD25FJ331	330
R505, 506 S	ERD25TJ124	120K
R507 S	ERD25TJ153	15K
R508 S	ERD25TJ683	68K
R509 S	ERD25TJ183	18K
R510 S	ERD25TJ123	12K
R511 S	ERD25TJ124	120K
R512 ⚠S	ERD25FJ4R7	4.7
R601, 602	ERO25CKF1602	16K
R603, 604⚠S	ERC14GK226	22M
R605, 606 S	ERD25FJ101	100
R607, 608 S	ERG1ANJ182	1.8K
R609, 610 S	ERD25FJ222	2.2K
R701, 702 S	ERG1ANJ562	5.6K

Ref. No.	Part No.	Value
R703, 704 S	ERD25FJ682	6.8K
R705, 706 S	ERD25FJ103	10K
R707, 708 S	ERD25TJ563	56K
R709, 710⚠	ERD2FCG560	56
R711, 712⚠	ERD2FCG560	56
R713, 714 S	ERD25TJ273	27K
R715, 716 S	ERD25TJ823	82K
R717, 718 S	ERD25TJ683	68K
R719, 720 S	ERD25FJ221	220
R721, 722 S	ERD25TJ683	68K
R723, 724⚠S	ERDS1FJ562	5.6K
R725, 726⚠S	ERD25FJ2R2	2.2
R727, 728⚠	ERD2FCJ4R7	4.7
R729 S	ERD25TJ473	47K
R730 S	ERD25TJ563	56K
R731, 732⚠S	ERD25FJ2R2	2.2
R733, 734⚠S	ERD25FJ2R2	2.2
CAPACITORS		
C1, 2 S	ECEA50M3R3R	3.3
C3, 4 S	ECCD1H101K	100P
C5, 6 S	ECKD1H471KB	470P
C7, 8 S	ECQM1H223JZ	0.022
C9, 10 S	ECQM1H682JZ	0.0068
C11, 12 ⚠	ECEA1HN010S	1
C13, 14 S	ECEA1CS330	33
C101 S	ECKD1H223ZF	0.022
C102, 103 S [EGA] only	ECCD1H180K	18P
C104 S	ECEA1HS100	10
C201, 202	ECEA1HG010S	1
C205, 206	ECEA1HG220S	22
C207, 208 S	ECCD1H120K	12P
C209, 210 S	ECCD1H180K	18P
C211, 212	ECEA1HG010S	1
C213, 214 S	ECCD1H151K	150P
C215, 216 S	ECQM1H683JZ	0.068
C217, 218 S	ECQM1H473JZ	0.047
C219, 220 S [EGA] only	ECCD1H330K	33P
C221, 222 S [EGA] only	ECKD1H561KB	560P

Ref. No.	Part No.	Value
C301, 302 S	ECEA50Z1	1
C303, 304 S	ECQM1H183JZ	0.018
C305, 306 S	ECQM1H104JZ	0.1
C307, 308 S	ECCD1H121K	120P
C309, 310 S	ECKD1H821KB	820P
C311, 312 S	ECQM1H222JZ	0.0022
C313, 314 S	ECQM1H223JZ	0.022
C315, 316	ECEA1HG100S	10
C317, 318 S	ECCD1H121K	120P
C401 ⚠	ECKDKC103PF	0.01
C402, 403	ECES56G822U	8200
C404, 405	ECEA1EG222S	2200
C407 [EGA, EF] only ⚠	ECQE2A473MW	0.047
C421, 422 S	ECQM1H103JZ	0.01
C423	ECEA1HG4R7S	4.7
C424	ECEA1HG220S	22
C425	ECEA1HG100S	10
C426	ECEA1HG470S	47
C427, 428	ECEA1HGR47S	0.47
C441, 442	ECEA1HG221S	220
C443	ECEA1HG010S	1
C444, 445 S	ECEA1HS100	10
C501 ⚠	ECEA1CN101S	100
C502 S	ECKD1H223ZF	0.022
C503	ECEA1HG4R7S	4.7
C504	ECEA1CG330S	33
C505	ECEA1HG100S	10
C506 S	ECKD1H223ZF	0.022
C601, 602	ECEA1HG010S	1
C603, 604 S	ECQM1H104JZ	0.1
C701, 702 S	ECKD1H561KB	560P
C703, 704 S	ECQM1H152JZ	0.0015
C705, 706 S	ECQM1H472JZ	0.0047
C707, 708 S	ECQM1H223JZ	0.022
C709, 710	ECEA2AG010S	1
C711, 712 S	ECQM1H223JZ	0.022

■ REPLACEMENT PARTS LIST

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Ⓚ –marked parts are used for black only, while ○ –marked parts are for silver type only.
4. Part other than Ⓚ – marked ○–marked are used for both black and silver type.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
6. The "**S**" mark is service standard parts and may differ from production parts.
7. The parenthesized numbers in the column of description stand for the quantity per set.

Black type model No. : SU-7(K)

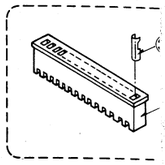
Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC1	SVINJM2043DD	Equalizer
IC201, 202	SVIUPC1270H	Driver
IC441	SVIM5230L	Regulator
IC501	SVIUPC1237H	Protection Circuit
IC601	SVITA7318P	Meter Amplifier
TRANSISTORS		
Q201, 202	2SD661–S	Thermal Detector
Q203, 204	2SC3181–R	Power Amplifier
Q205, 206	2SA1264–R	Power Amplifier
Q441 S	2SC1384A–R	Power ON/OFF, Muting
Q442 S	2SA684–QNC	Power ON/OFF, Muting
Q461 S	2SC1328–T	Switching
Q462 S	2SA684–QNC	Regulator
Q501, 502	2SA992	Over Current Detector
Q701	2SC1815–Y	Peak Detector
Q702, 703	2SA1015–Y	Peak Detector, Current Stabilizer
Q704, 705	2SC1815–Y	Current Stabilizer, DC Amplifier
Q706, 707	2SA1015–Y	DC Amplifier, Buffer
Q708, 715	2SC1815–Y	Buffer, Switching
Q709	2SC1384Q	Driver
Q710 S	2SA684–QNC	Driver
Q711	2SA1265–R	Voltage Control
Q712	2SC3182–R	Voltage Control
Q713	2SC1845	Switching
Q714	2SA992	Switching
DIODES		
D201~204 S	MA162A	Switching
D205~208 S	MA162A	Switching
D401~404 ⚠S	SVDS3V40	Rectifier
D405 ⚠	SVDS4VB20	Rectifier
D421	SVDMZ339B	39V, Zener
D441	MA1150M	15V, Zener
D442 S	SVDMZ339B	39V, Zener
D461	SVDMZ306A3	6V, Zener
D462	SVDMZ306C1	6V, Zener
D463 S	MA162A	Switching
D505 S	MA162A	Switching
D701~712 S	MA162A	Switching
D713, 714 ⚠	SVDS3S3M	Back Ward Current Prevention
D715 S	MA162A	Switching
COILS		
L101~104 [EGA] only	ELQS181KB	Choke
L201, 202	SLQY15G–10	Choke
L203, 204	SLQY07G–30	Choke
TRANSFORMER		
T1 ⚠	SLT5U35	Power Source
LAMPS		
PL1~4	XAMS6Q8B	Peak Power, Meter
PL461~465, 501	XAMS7Q25A	6V, 30mA
COMPONENT COMBINATIONS		
Z401, 402	SXRFS203ZSM	0.01μFx2
THERMISTORS		
TH101, 102	RRT104	100kΩ
TH201, 202	ERTD2ZCL101S	100Ω
PS1	SRPBA47101	Thermal Detector
FUSES		
F1 [Other] ⚠	XBA2C16TRO	250V, T1.6A
F1 [XA,PC] ⚠	XBA2C31TRO	250V, T3.15A

Ref. No.	Part No.	Description
F2 [EGA,EW XA,PC] ⚠	XBA2C16TRO	250V, T1.6A
F3, 4 ⚠	XBA2C31TRO	250V, T3.15A
RELAY		
RLY501 ⚠	SSY91	
VARIABLE RESISTORS		
VR101	EWE00605A15S	Main, 100kΩ(A)
VR102	EVC00205G15S	Balance, 100kΩ (G)
VR201, 202	EVNK0AA00B13	ICQ Control, 1kΩ(B)
VR301, 302	EWC00105C15S	Tone, 100kΩ(C)
VR601, 602	EVNK7AA00B12	Meter, 100Ω(B)
SWITCHES		
S1	SSH451	Input Selector
S2	SSH1085	Super Bass
S3 ⚠	SSH1057	Power Source
S4 [XA,PC] ⚠	ESE37219	Voltage Selector

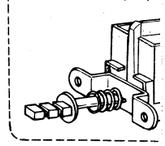
Ref. No.	Part No.	Description & Pcs
CABINET and CHASSIS PARTS		
1 ○	SGW4470–1SB	Front Panel (Silver) (1)
1 Ⓚ	SGW4470–1BA	Front Panel (Black) (1)
2	SBD69–1	Knob, Bass, Treble, Balance (3)
3	SGX7447–3	Holder, Bass, Treble, Balance (1)
4 ○	SGU321–2	Transparent Plate (Silver) (1)
4 Ⓚ	SGU321–1	Transparent Plate (Black) (1)
5	SHR9635	Holder, Bass, Treble, Balance (3)
6	SHR9637	Holder, Bass, Treble, Balance (3)
7	SBW407–5	Button, Tape (1)
8	SBW407–6	Button, Aux (1)
9	SBW407–7	Button, Tuner (1)
10	SBW407–8	Button, Player (1)
11	SSM179–1	Meter (1)
12	SUS191–2	Spring (4)
13	SBD75–1	Button, Main Volume (1)
14	SHR9629	Holder, Selector (3)
15	SGX7449–1	Holder, Main Volume (1)
16	SGL143	Panel Light (Green) (3)
17	SDH547	Reflector Plate (1)
18	SHR5217	Sheet, Main Volume (1)
19	SGL143–1	Panel Light (Orange) (3)
20	SJJ63F	Jack, Headphone (1)
21[EX]	SKUU7E	Bottom Board(W/Feet)(1)
21[XA,PC]	SKUU7X	Bottom Board(W/Feet)(1)
21[EGA]	SKUU7G	Bottom Board(W/Feet)(1)
21[EW]	SKUU7W	Bottom Board(W/Feet)(1)
21[Other]	SKUU7F	Bottom Board(W/Feet)(1)
21-1	SKL245–2	Foot (4)
22	SHR401–1	Pin (2)
23	SBC489	Button, Power (1)
24	SBC441	Button, Super Bass (1)
25	SJF4437	Terminal Board, Speaker (1)
26	SJF3055N	Terminal Board, Input (1)
27[Except XL]	SJS9225	Socket (1)
28[Other]	SFDAB31E01	Cord, Power Source (1)
28[XA,PC]	SJA111	Cord, Power Source (1)
28[EGA]	SJA153	Cord, Power Source (1)
28[XL]	QFC1207MA	Cord, Power Source (1)

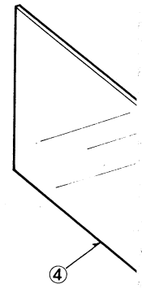
Ref. No.	Part No.	Description & Pcs
29	SHR9631	Connector (1)
30	SJS9605	Connector (1)
31	SJS9325	Connector (1)
32 ○	SHE135	Pin (1)
32 Ⓚ	SHE135–1	Pin (1)
33[Other]	SGP3551–1A	Rear Panel (1)
33[XA]	SGP3551–2A	Rear Panel (1)
33[XL]	SGP3551–3A	Rear Panel (1)
34 ○	SKC1111S1	Cabinet (Silver) (1)
34 Ⓚ	SKC1111BB1	Cabinet (Black) (1)
35	SJT347	Crip, Fuse (2)
36	SMX727	Shield Cover (1)
37[Other]	SHR127	Bushing (1)
37[XL]	SHR131	Bushing (1)
38	SHR301	Clamper, Lead (1)
39	SJT3213	Pin (1)
40	SJT3319	Connector
41	SMX685	Cover, Capacitor (C401) (1)
SCREWS		
N1	XTB3+10BFN	Tapping, ⊕ 3x10 (3)
N2	XTB3+10BFZ	Tapping, ⊕ 3x10 (2)
N3	XSN3+6S	⊕ 3x6 (2)
N4	XSN3+6S	⊕ 3x6 (2)
N5	XTB3+12BFN	Tapping, ⊕ 3x12 (4)
N6	XTB4+8BFN	Tapping, ⊕ 4x8 (4)
N7	XTB3+8BFZ	Tapping, ⊕ 3x8 (4)
N8 ○	SNE2095–2	Tapping, Cabinet (4)
N8 Ⓚ	SNE2095–3	Tapping, Cabinet (4)
WASHERS		
N10	XWG3	Plain, ϕ3 (3)
N11	XWG3	Plain, ϕ3 (2)
N12	XWA3B	Spring, ϕ3 (2)
N13	XWA3B	Spring, ϕ3 (2)
N14	XWG3	Plain, ϕ3 (4)
NUT		
N20	XNS12	ϕ12 (1)
ACCESSORIES		
A1[XA, PC]	SJP5213–1	Plug Adaptor (1)
A2[EGA] only ⚠	XBA2C16TRO	Fuse, 250V, T1.6A (3)
A3[Other]	SQF11603	Instruction Book (1)
A3[XA, PC]	SQF11605	Instruction Book (1)
A3[Ei]	SQF11607	Instruction Book (1)
A3[XL]	SQF11609	Instruction Book (1)
A3[EGA]	SQF11611	Instruction Book (1)
PACKING PARTS		
P1[Other]	SPG4301	Carton Box (1)
P1[EF]	SPG4303	Carton Box (1)
P1[XL]	SPG4305	Carton Box (1)
P2[Other]	SPS3917	Pad (Left) (1)
P2[XL] only	SPS3917–1	Pad (Left) (1)
P3[Other]	SPS3919	Pad (Right) (1)
P3[XL]	SPS3919–1	Pad (Right) (1)
P4 ○	SPP697	Polyethylene Bag (1)
P4 Ⓚ	SPP647	Polyethylene Bag (1)

■ EXPLODE



Power switch (S3)



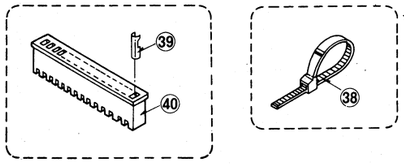


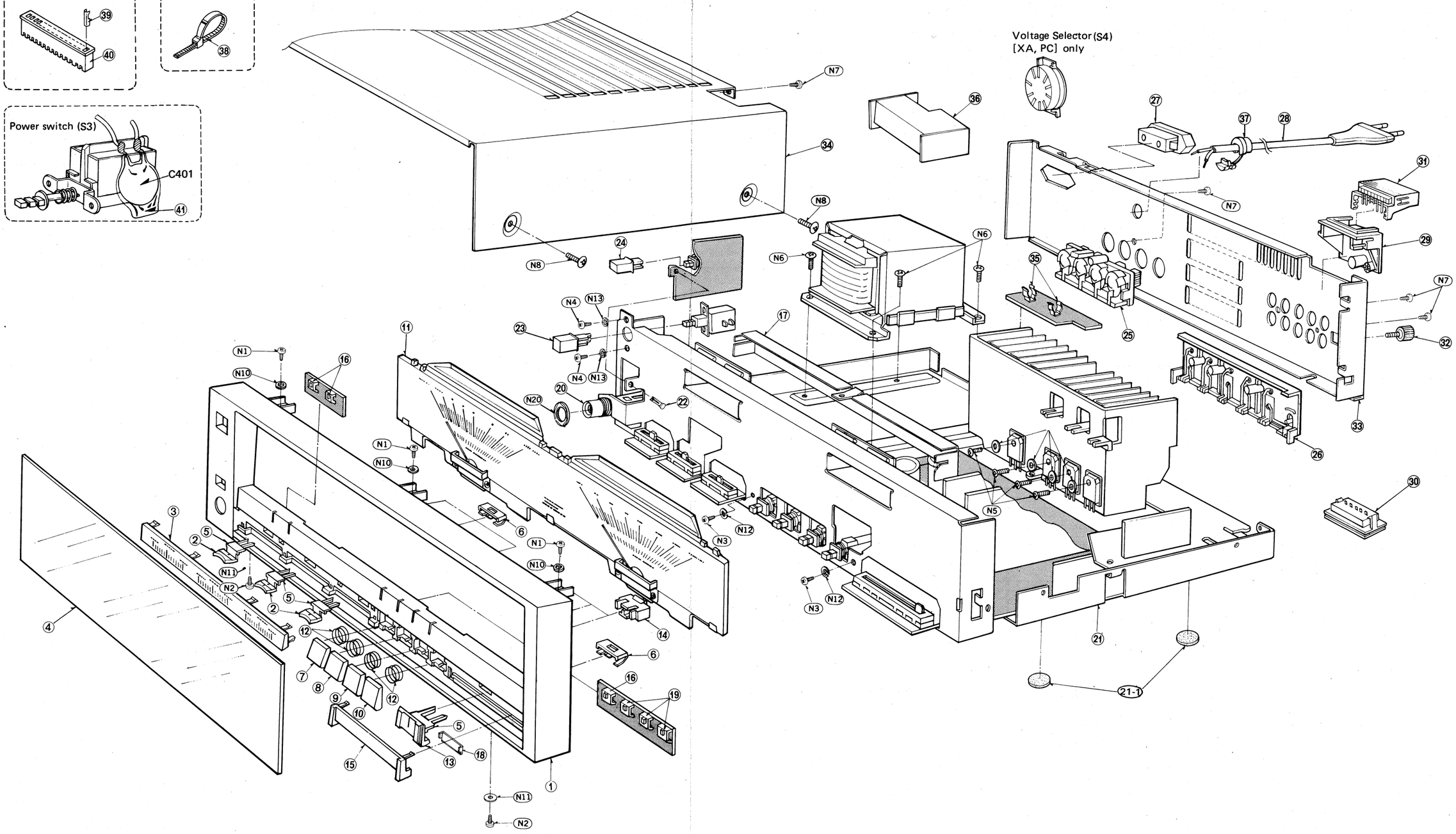
■ EXPLODED VIEWS

reas.

No. : SU-7(K)

Description & Pcs	
nector	(1)
nector	(1)
nector	(1)
	(1)
	(1)
Panel	(1)
Panel	(1)
Panel	(1)
net (Silver)	(1)
net (Black)	(1)
Fuse	(2)
d Cover	(1)
ing	(1)
ing	(1)
per, Lead	(1)
	(1)
nector	
r, Capacitor	(1)
01)	
oing, ⊕ 3x10	(3)
oing, ⊕ 3x10	(2)
3x6	(2)
3x6	(2)
oing, ⊕ 3x12	(4)
oing, ⊕ 4x8	(4)
oing, ⊕ 3x8	(4)
oing, Cabinet	(4)
oing, Cabinet	(4)
n, φ3	(3)
n, φ3	(2)
ng, φ3	(2)
ng, φ3	(2)
n, φ3	(4)
	(1)
Adaptor	(1)
, 250V, T1.6A	(3)
ruction Book	(1)
ruction Book	(1)
ruction Book	(1)
ruction Book	(1)
ruction Book	(1)
on Box	(1)
on Box	(1)
on Box	(1)
(Left)	(1)
(Left)	(1)
(Right)	(1)
(Right)	(1)
ethylene Bag	(1)
ethylene Bag	(1)





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